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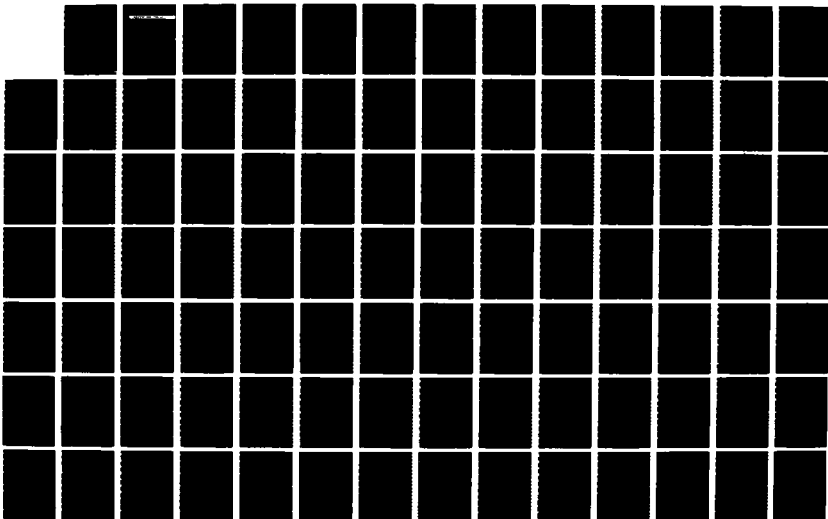
SOUTH ATLANTIC OMEGA VALIDATION VOLUME 2 APPENDICES F-L
(U) SYSTEMS CONTROL TECHNOLOGY INC PALO ALTO CA
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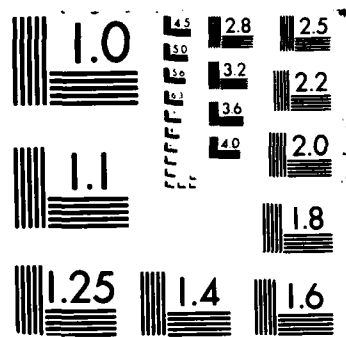
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SOUTH ATLANTIC OMEGA VALIDATION

Final Report

VOLUME II: APPENDICES F-L

January 1983

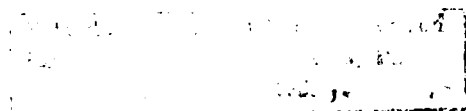
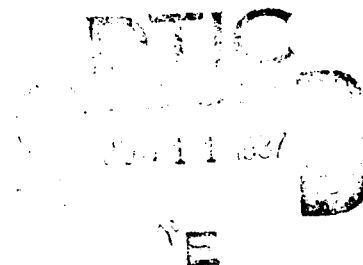
Prepared by:

T. M. Watt
G. J. Bailie
M. Sutphen

Systems Control Technology, Inc.
Palo Alto, California 94304

for

OMEGA NAVIGATION SYSTEM OPERATIONS DETAIL
Washington, D.C. 20590



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REPORT DOCUMENTATION PAGE

1a. REPORT SECURITY CLASSIFICATION			1b. RESTRICTIVE MARKINGS		
2a. SECURITY CLASSIFICATION AUTHORITY			3. DISTRIBUTION/AVAILABILITY OF REPORT This document has been approved for public release and its distribution is unlimited.		
2b. DECLASSIFICATION/DOWNGRADING SCHEDULE					
4. PERFORMING ORGANIZATION REPORT NUMBER(S)			5. MONITORING ORGANIZATION REPORT NUMBER(S)		
6a. NAME OF PERFORMING ORGANIZATION Systems Control Technology, Inc		6b. OFFICE SYMBOL (If applicable)		7a. NAME OF MONITORING ORGANIZATION	
6c. ADDRESS (City, State, and ZIP Code) 1801 Page Mill Rd. Palo Alto, CA 94303		7b. ADDRESS (City, State, and ZIP Code)			
8a. NAME OF FUNDING/SPONSORING ORGANIZATION		8b. OFFICE SYMBOL (If applicable)		9. PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER DTICG23-81-C-40023	
8c. ADDRESS (City, State, and ZIP Code)		10. SOURCE OF FUNDING NUMBERS			
		PROGRAM ELEMENT NO.		PROJECT NO.	TASK NO.
					WORK UNIT ACCESSION NO.
11. TITLE (Include Security Classification) South Atlantic Omega Validation. Volume II: Appendices F-L					
12. PERSONAL AUTHOR(S) T.M. Watt, G.J. Bailie, M. Sutphen					
13a. TYPE OF REPORT Final		13b. TIME COVERED FROM _____ TO _____		14. DATE OF REPORT (Year, Month, Day) 1983 January	
15. PAGE COUNT					
16. SUPPLEMENTARY NOTATION					
17. COSATI CODES			18. SUBJECT TERMS (Continue on reverse if necessary and identify by block number)		
FIELD	GROUP	SUB-GROUP			
19. ABSTRACT (Continue on reverse if necessary and identify by block number)					
20. DISTRIBUTION/AVAILABILITY OF ABSTRACT <input type="checkbox"/> UNCLASSIFIED/UNLIMITED <input type="checkbox"/> SAME AS RPT. <input type="checkbox"/> DTIC USERS					
21. ABSTRACT SECURITY CLASSIFICATION					
22a. NAME OF RESPONSIBLE INDIVIDUAL			22b. TELEPHONE (Include Area Code)		22c. OFFICE SYMBOL

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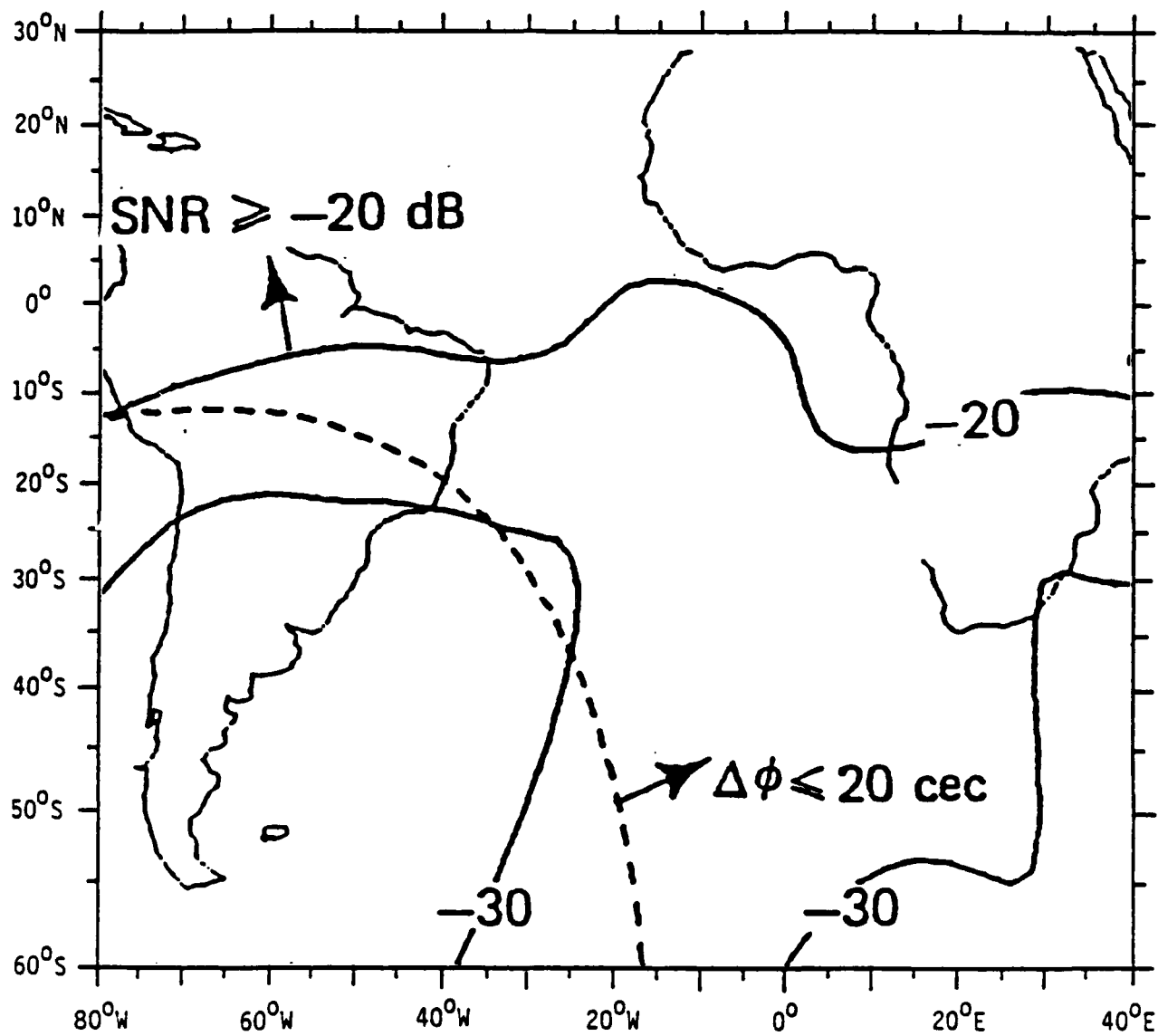
APPENDIX F

THEORETICAL PREDICTIONS OF OMEGA SIGNAL COVERAGE AT 10.2 KHZ FOR
SOUTH ATLANTIC REGION

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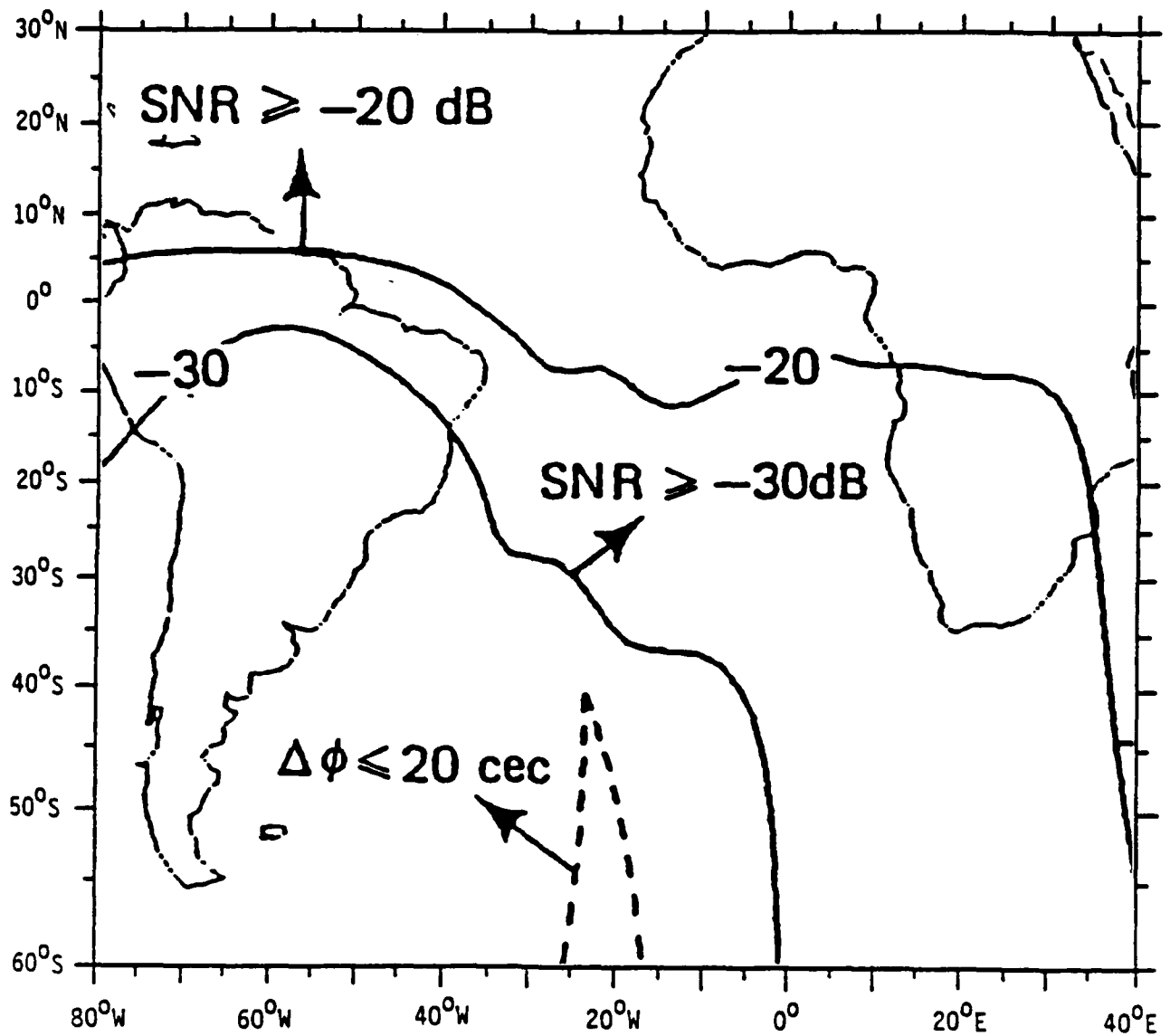
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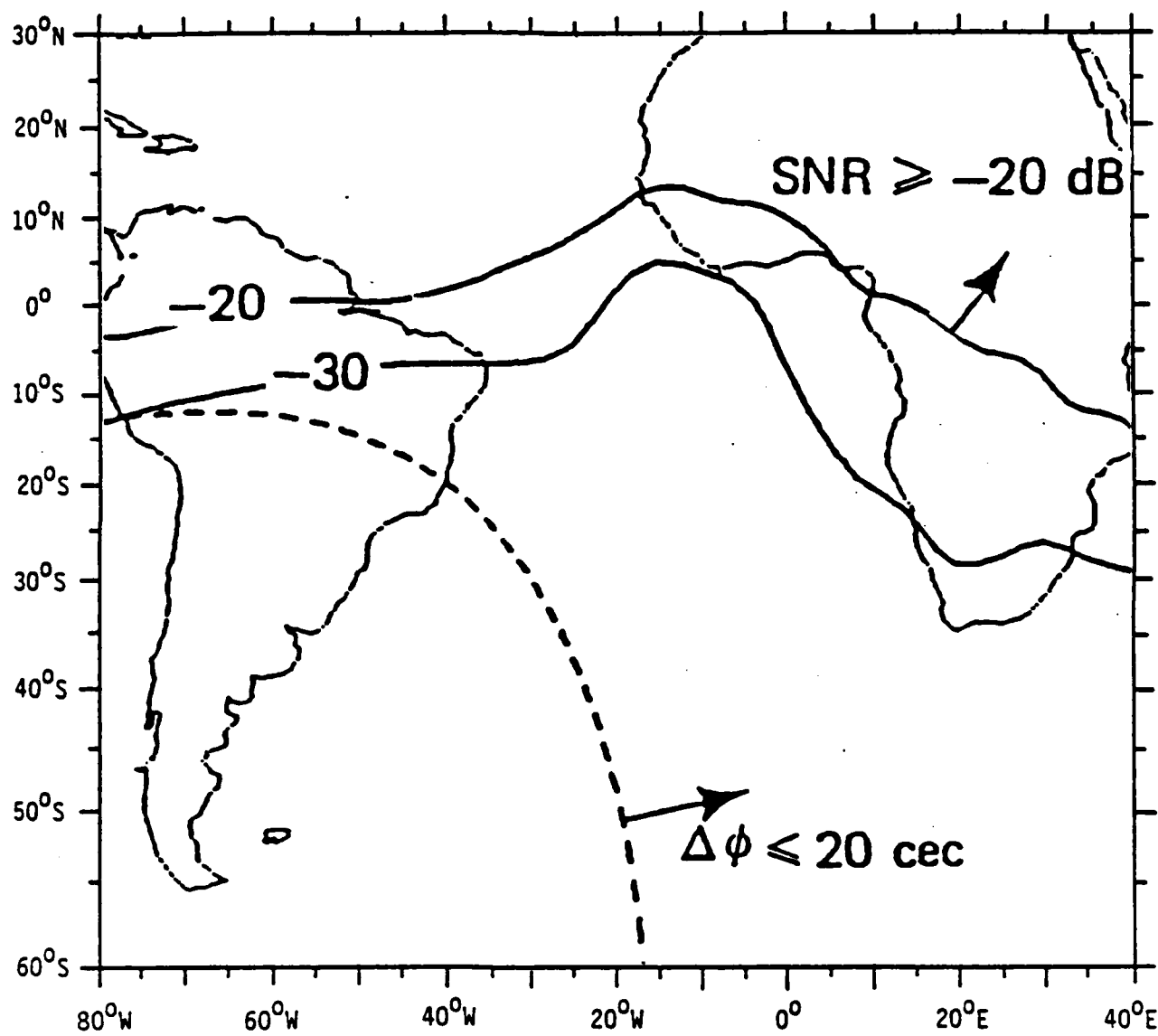
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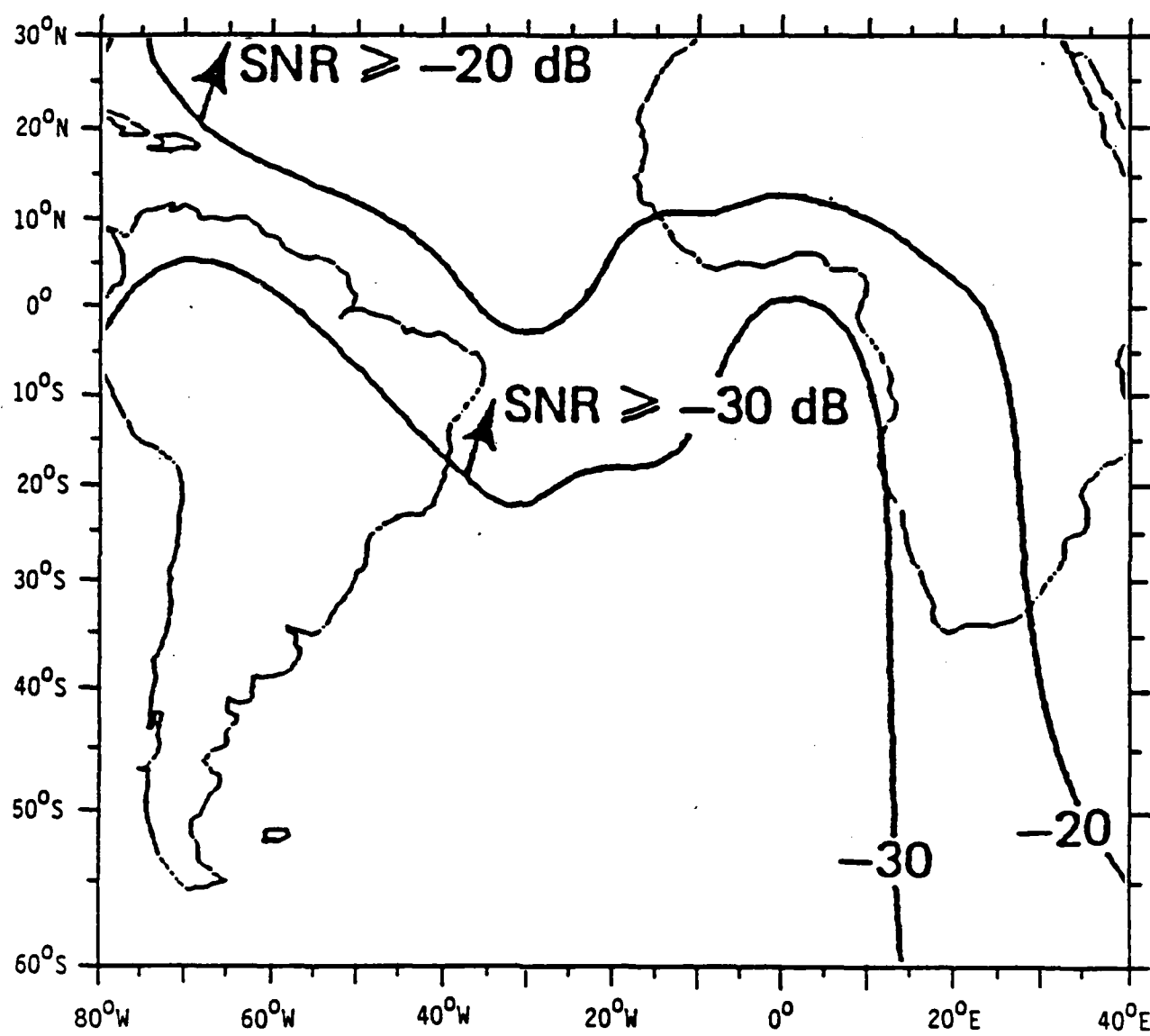
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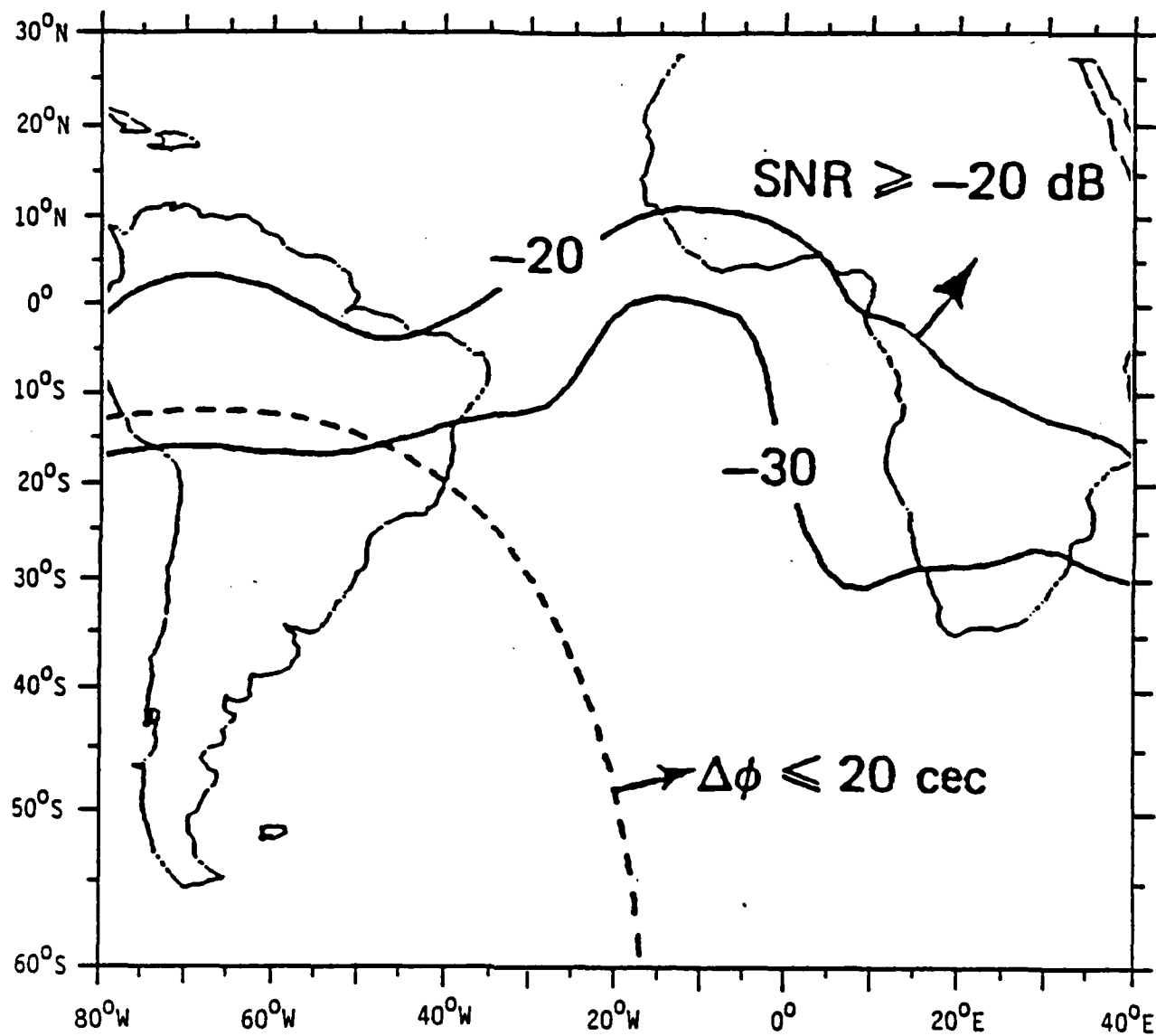
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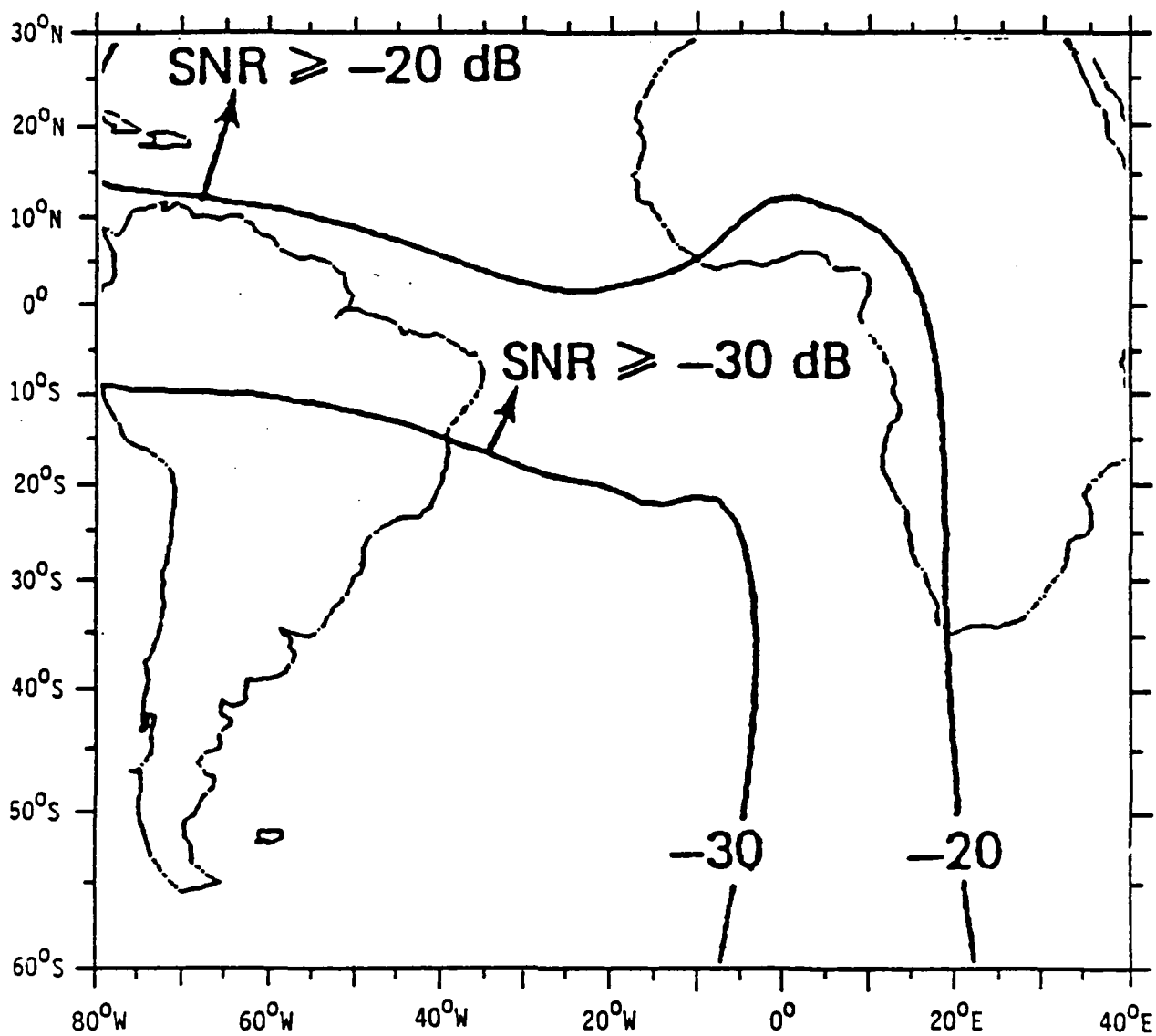
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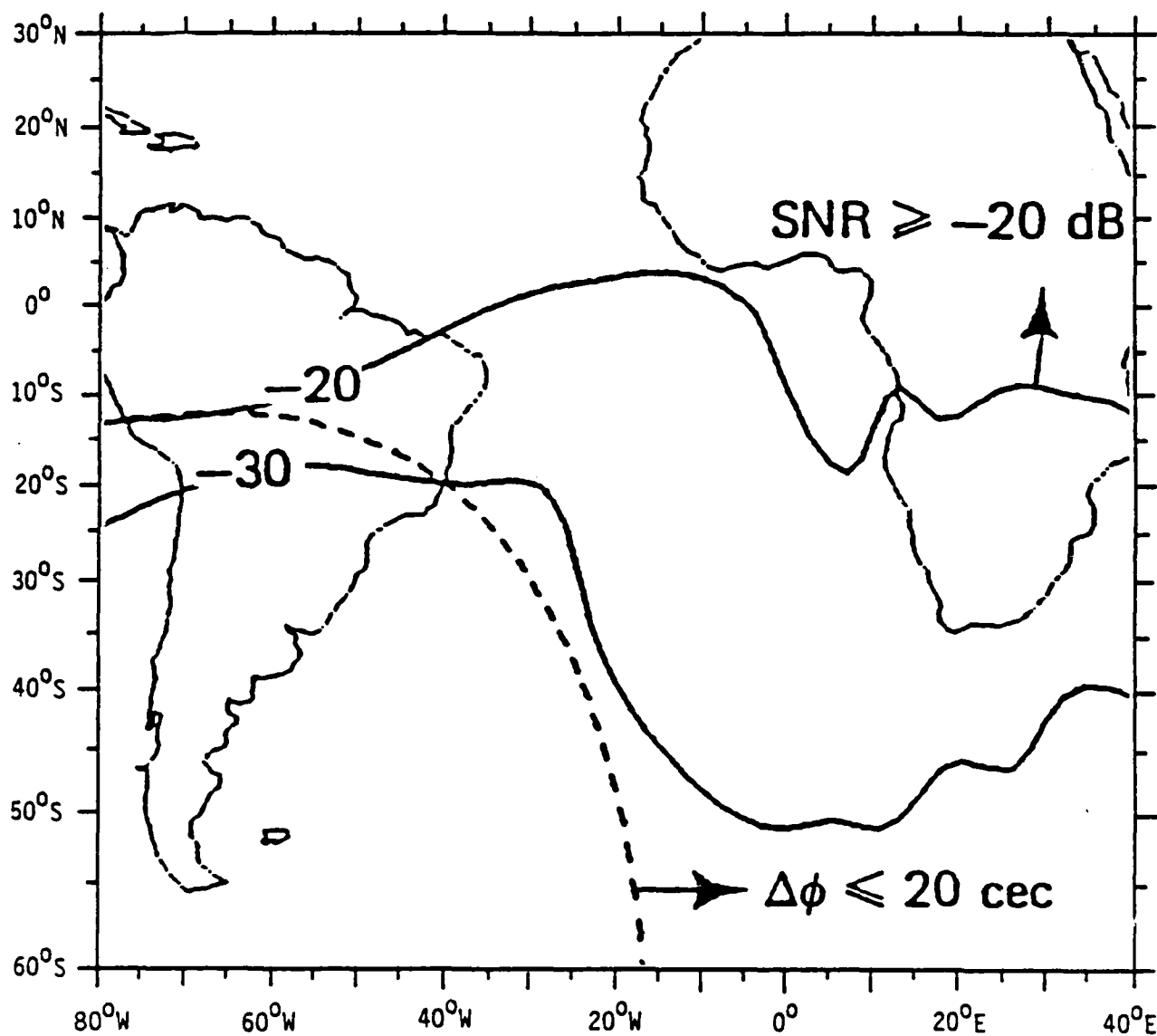
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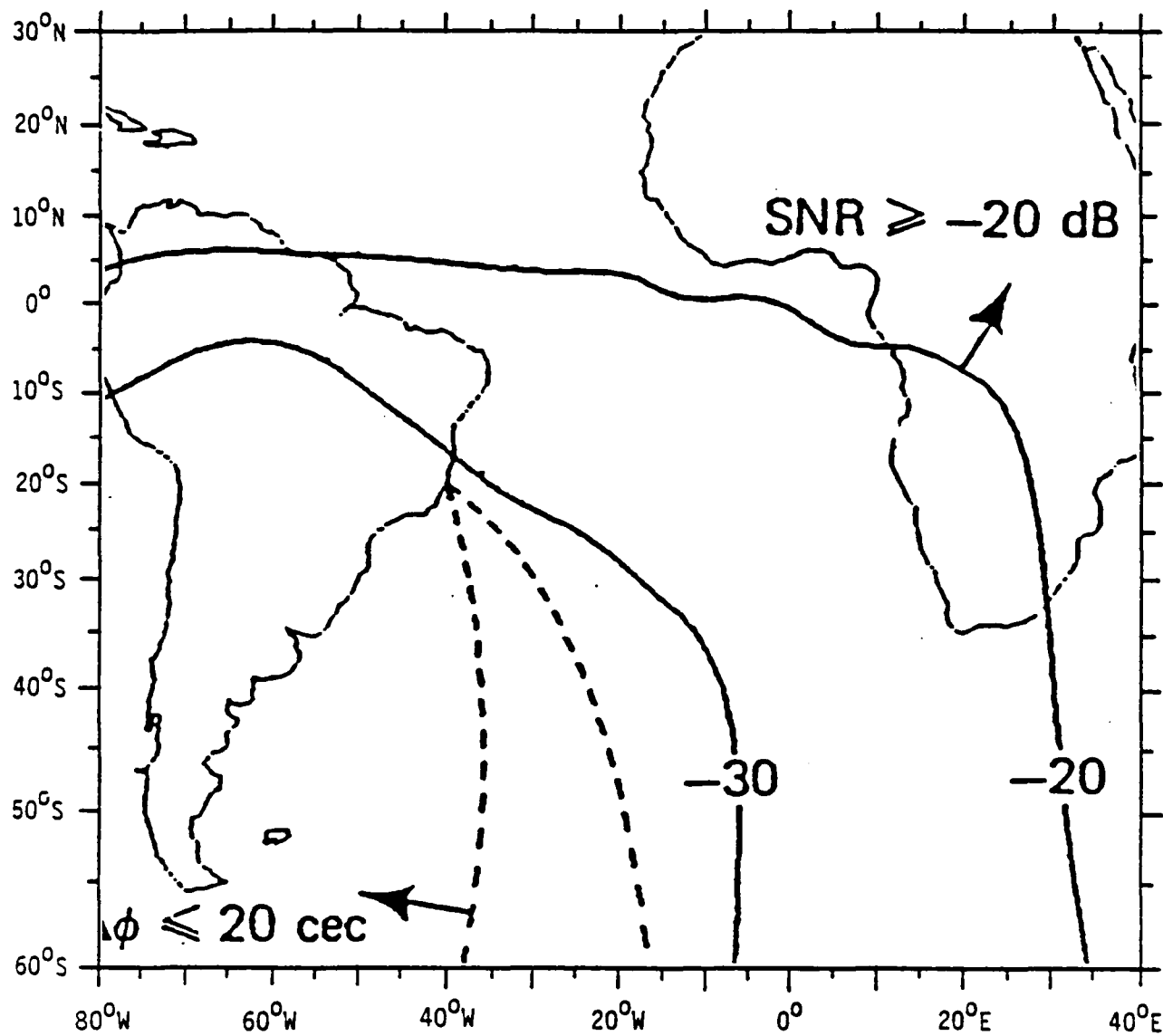
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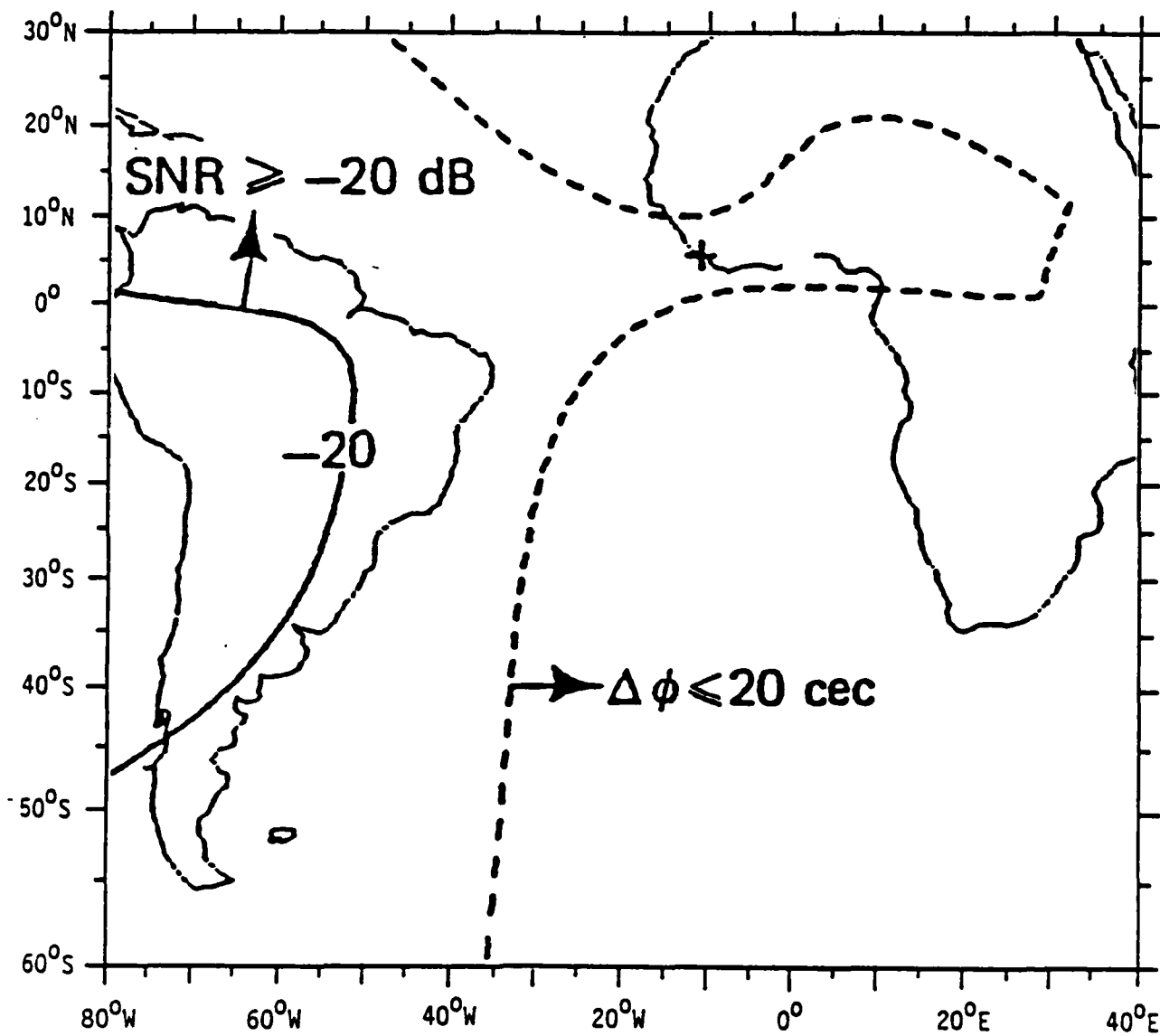
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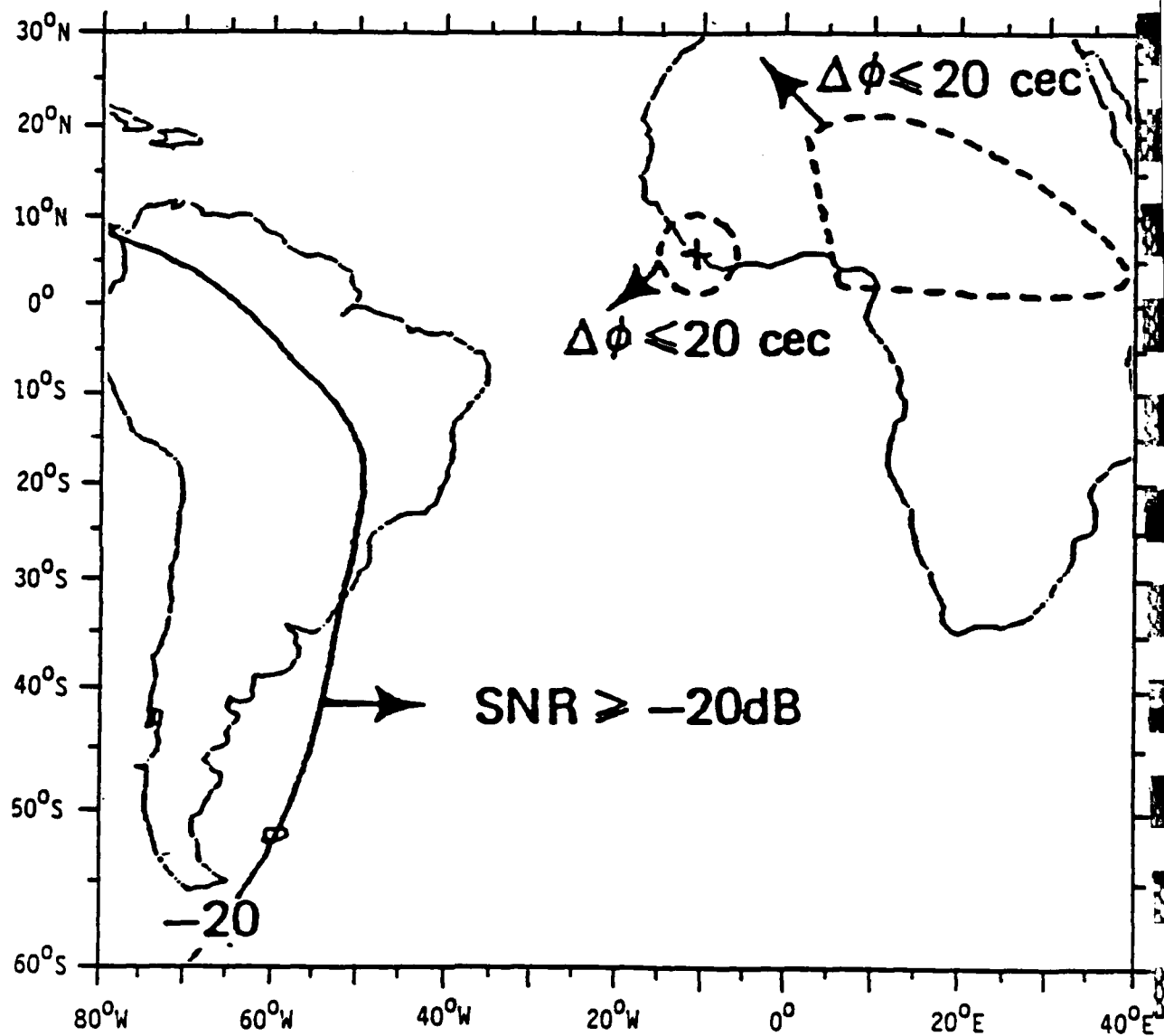
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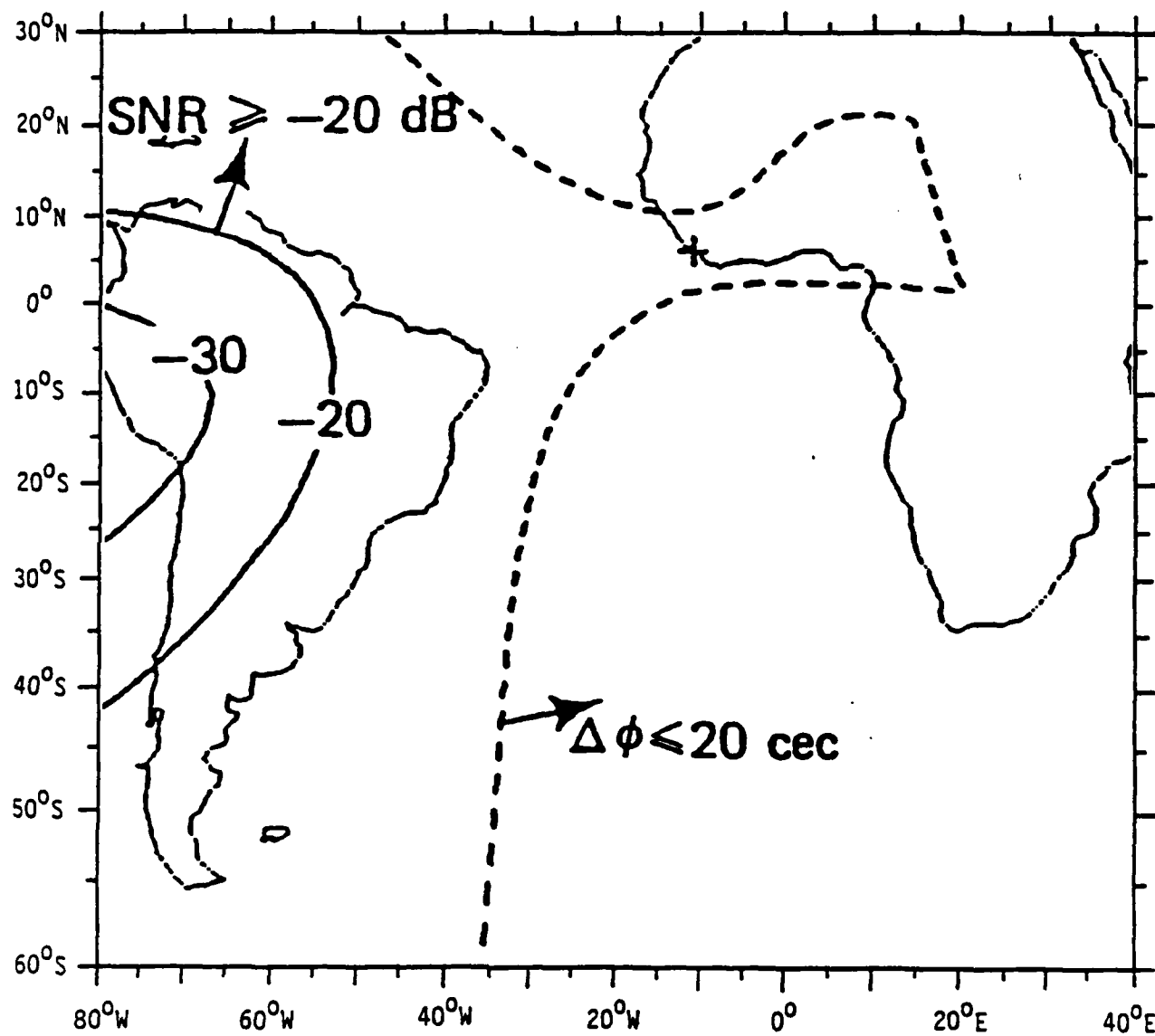
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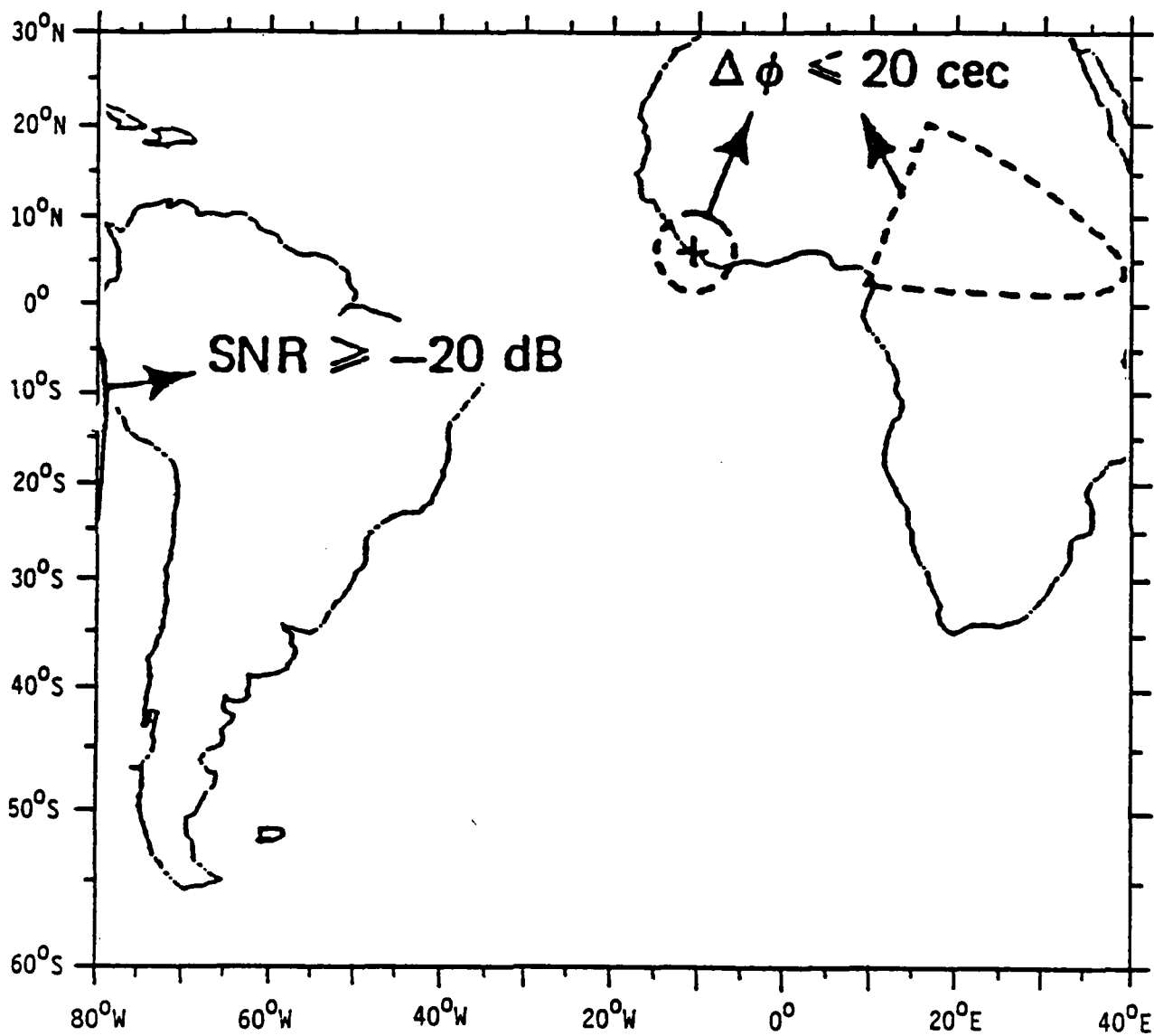
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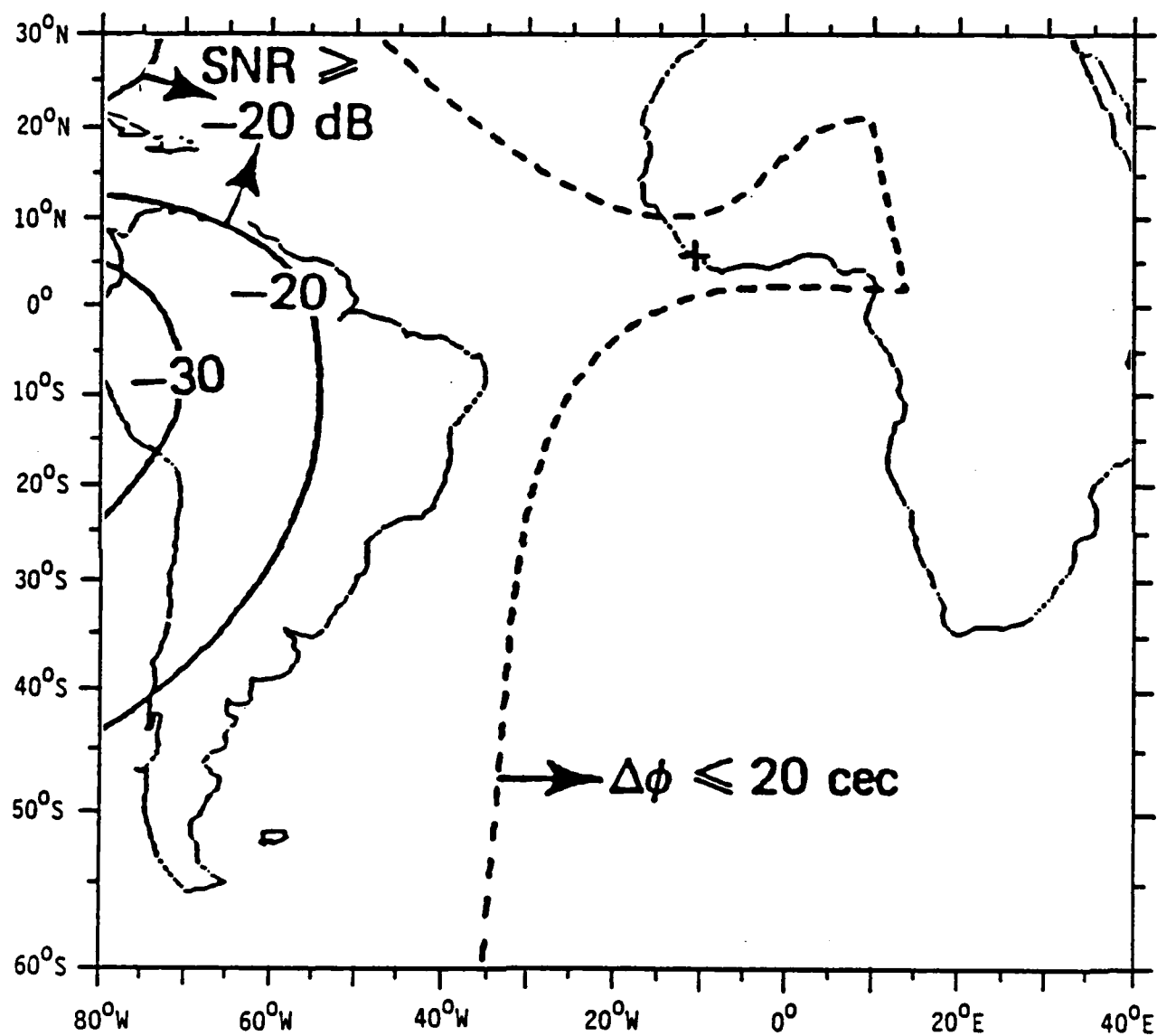
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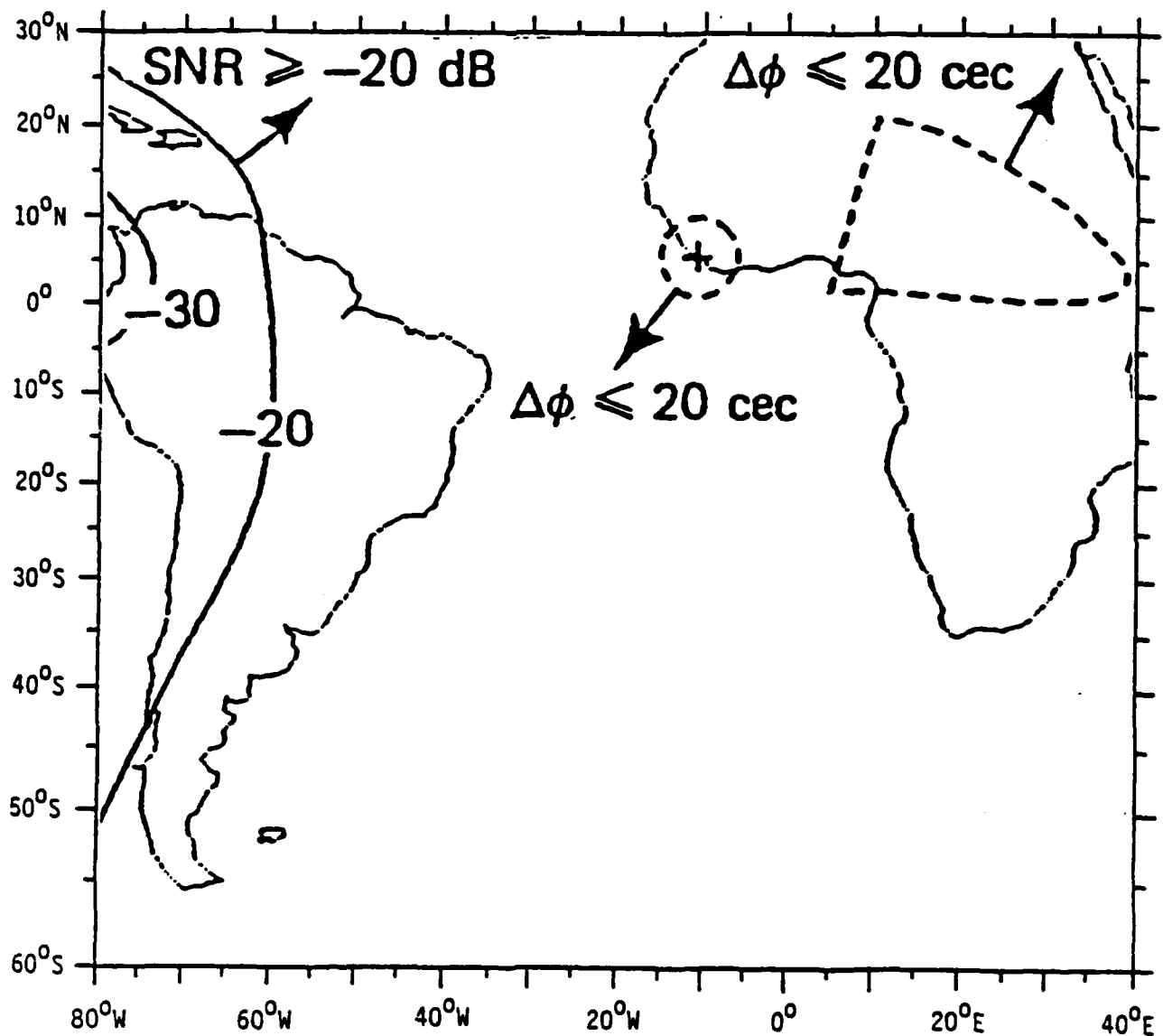
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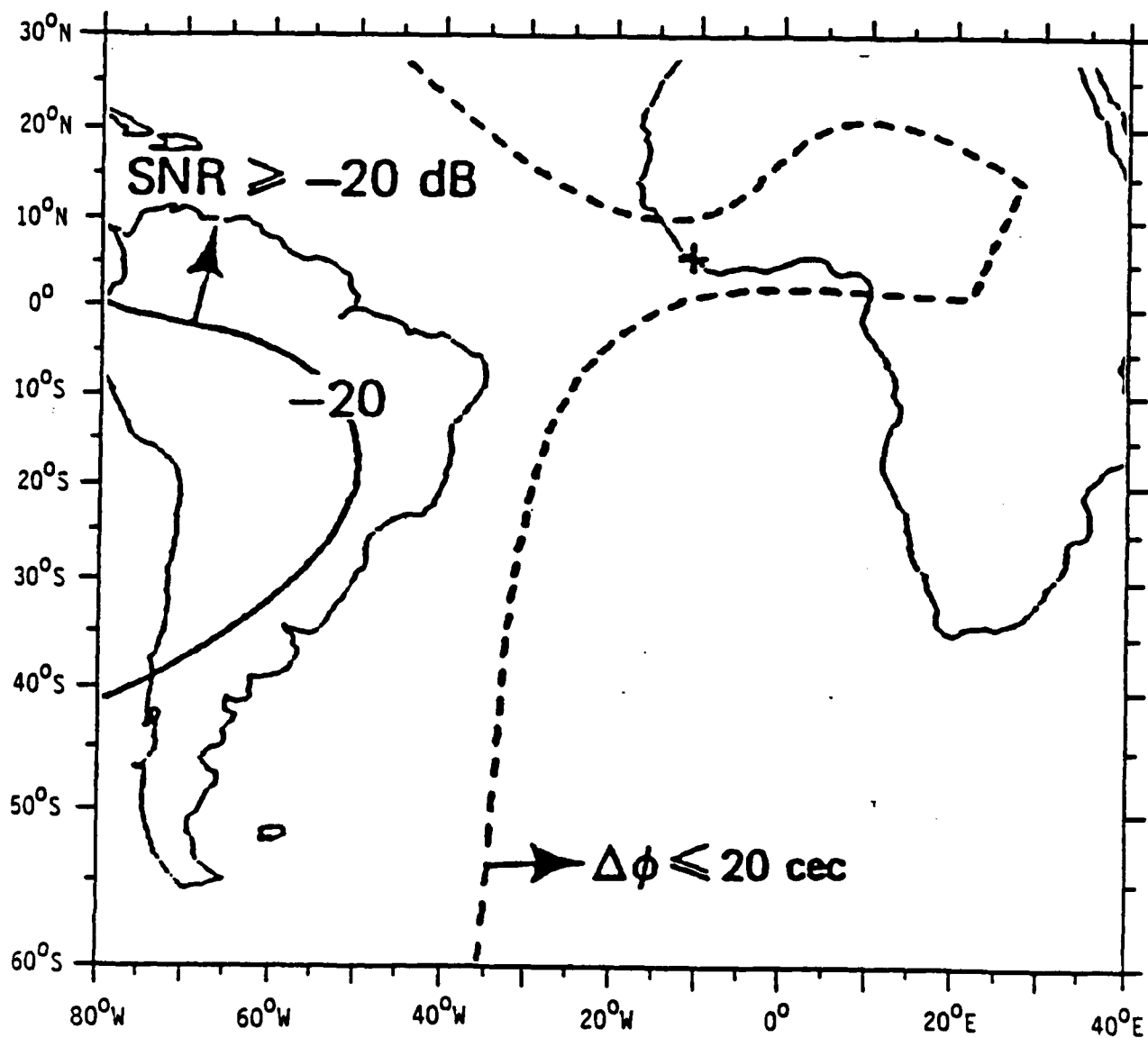
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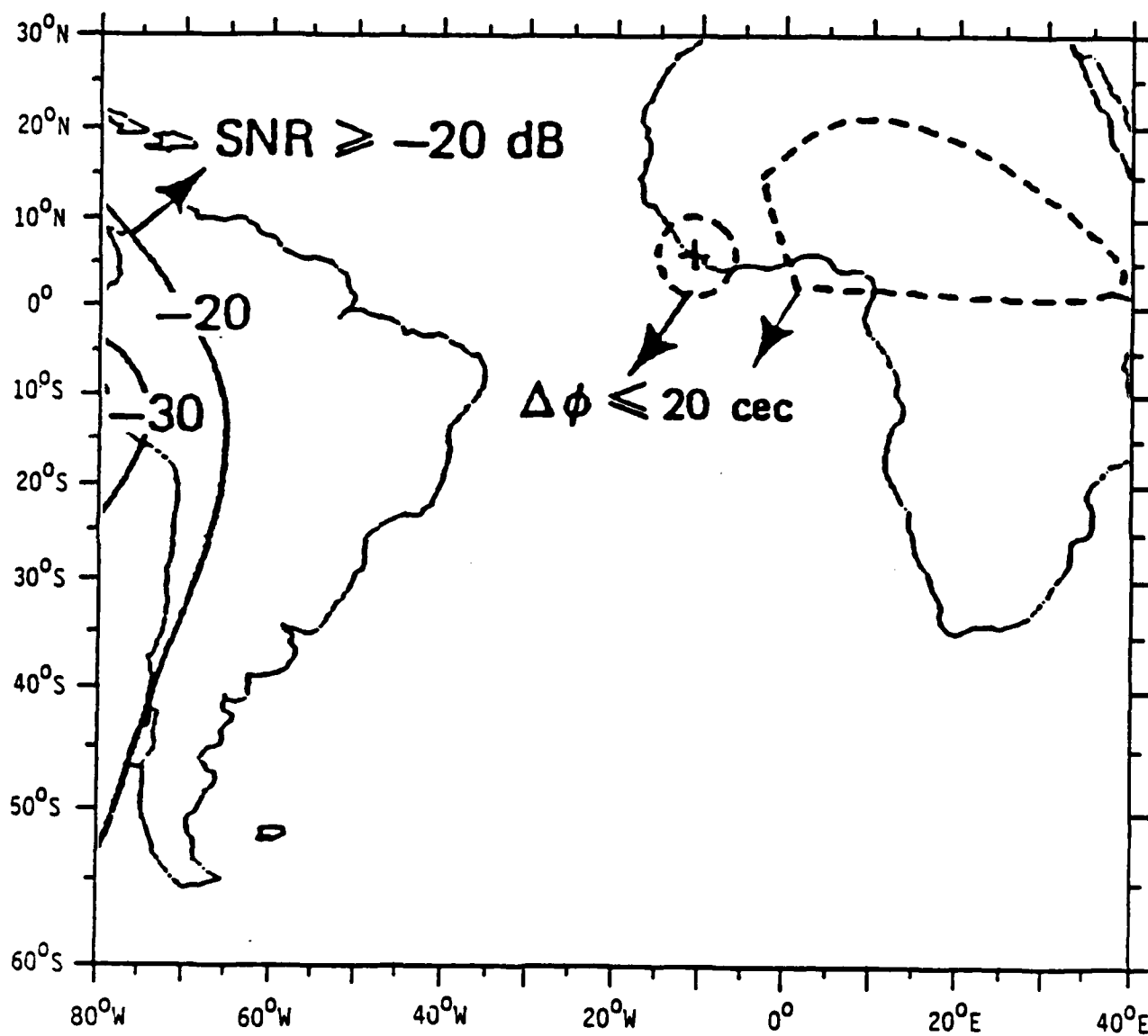
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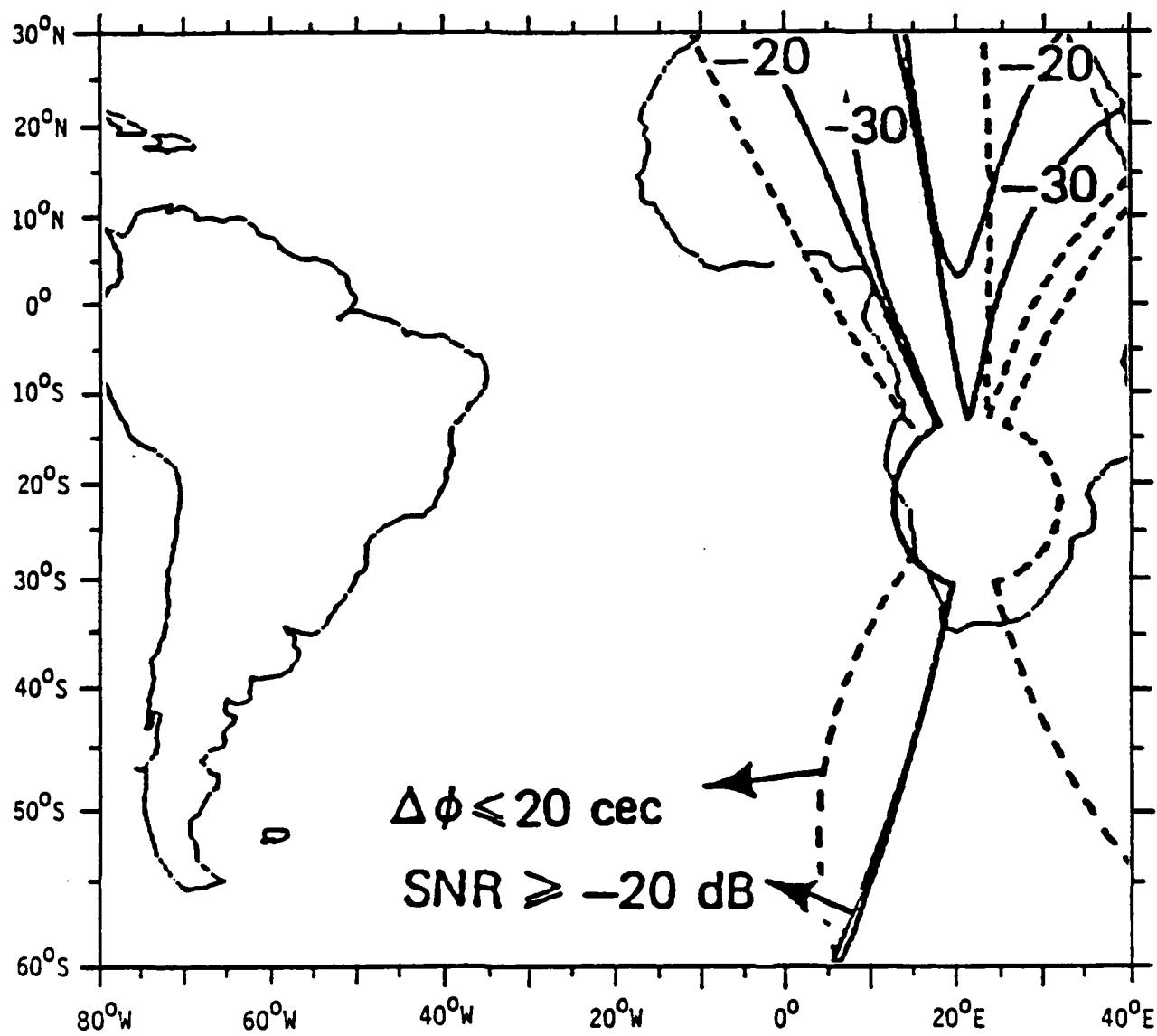
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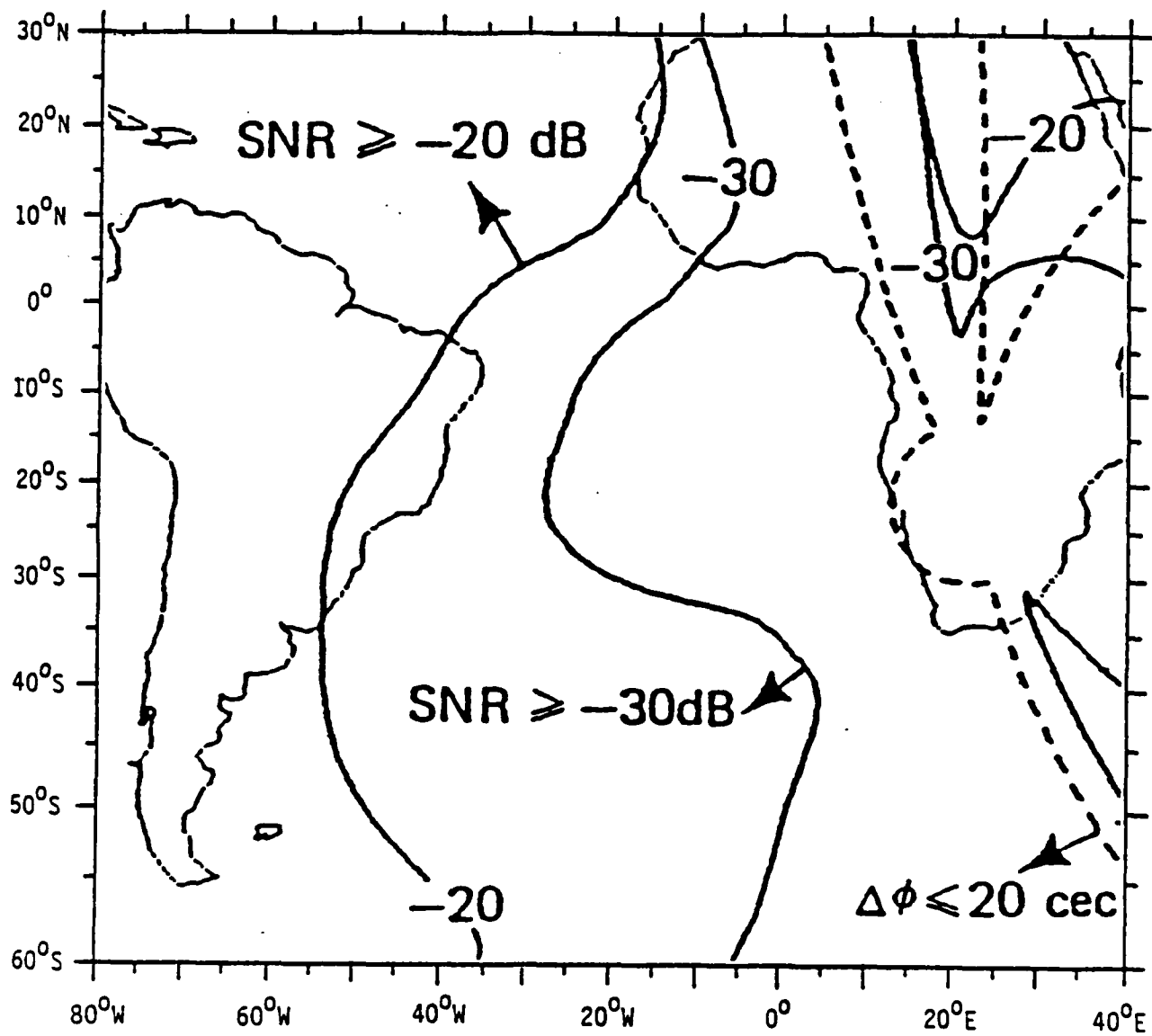
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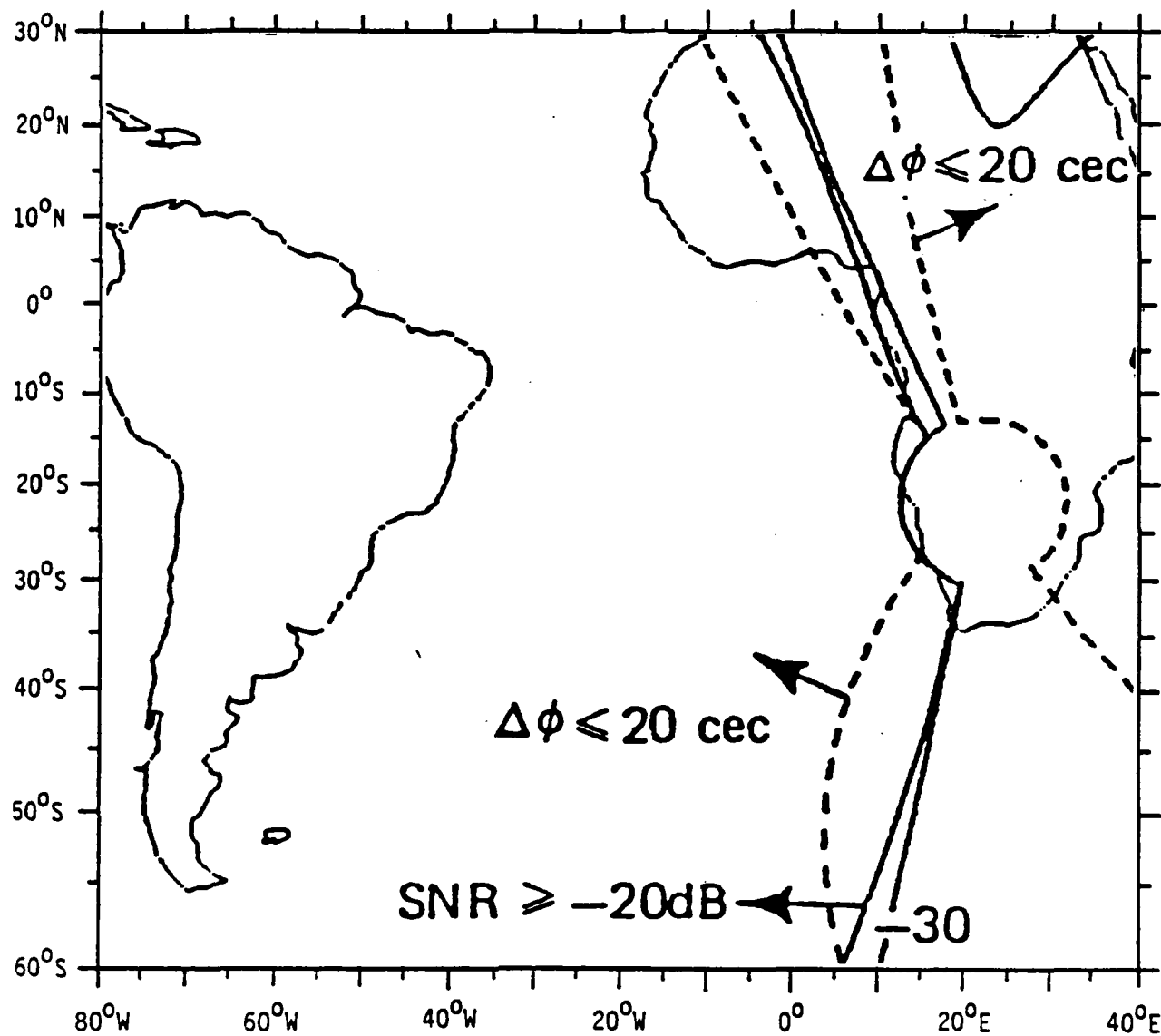
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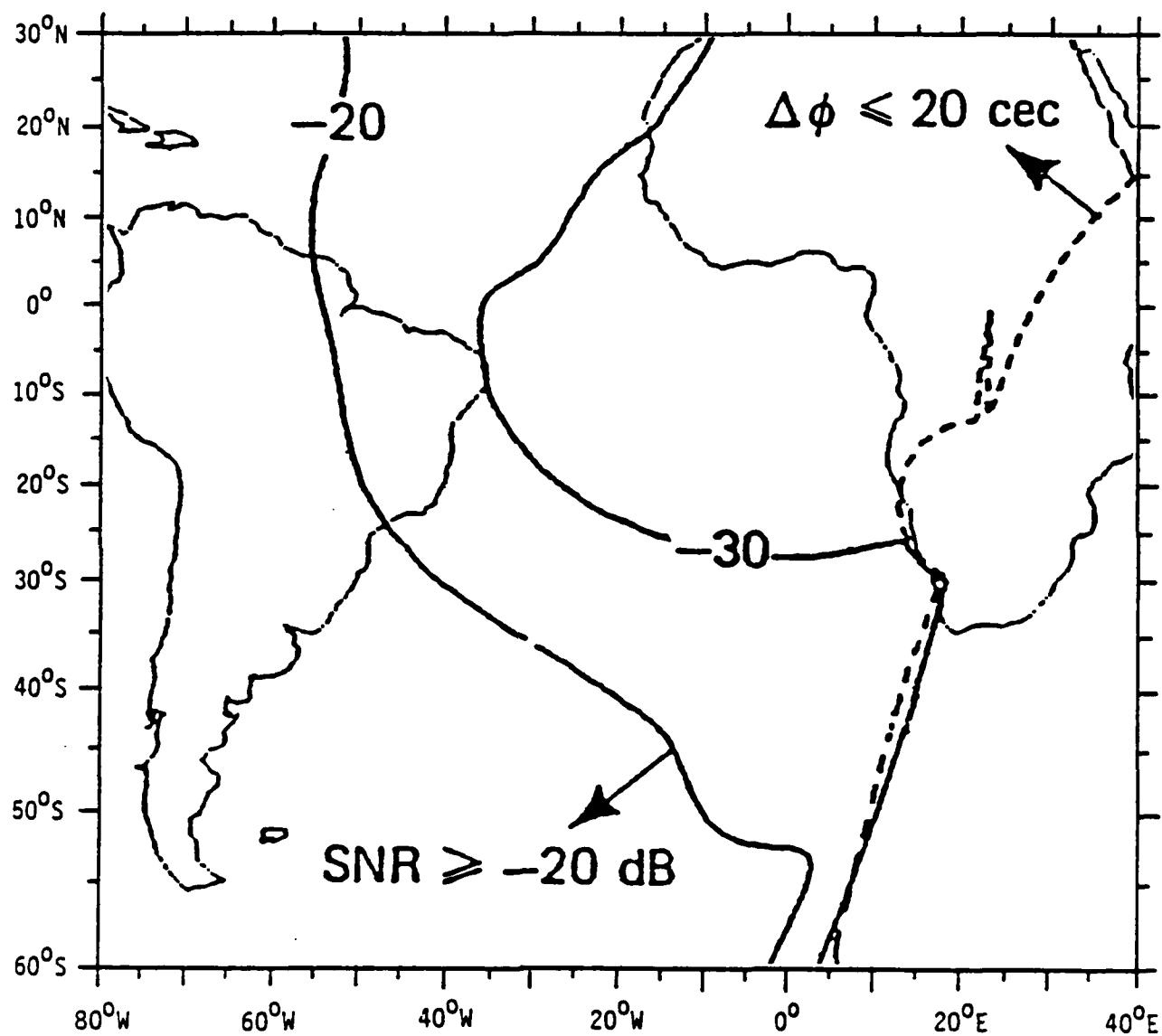
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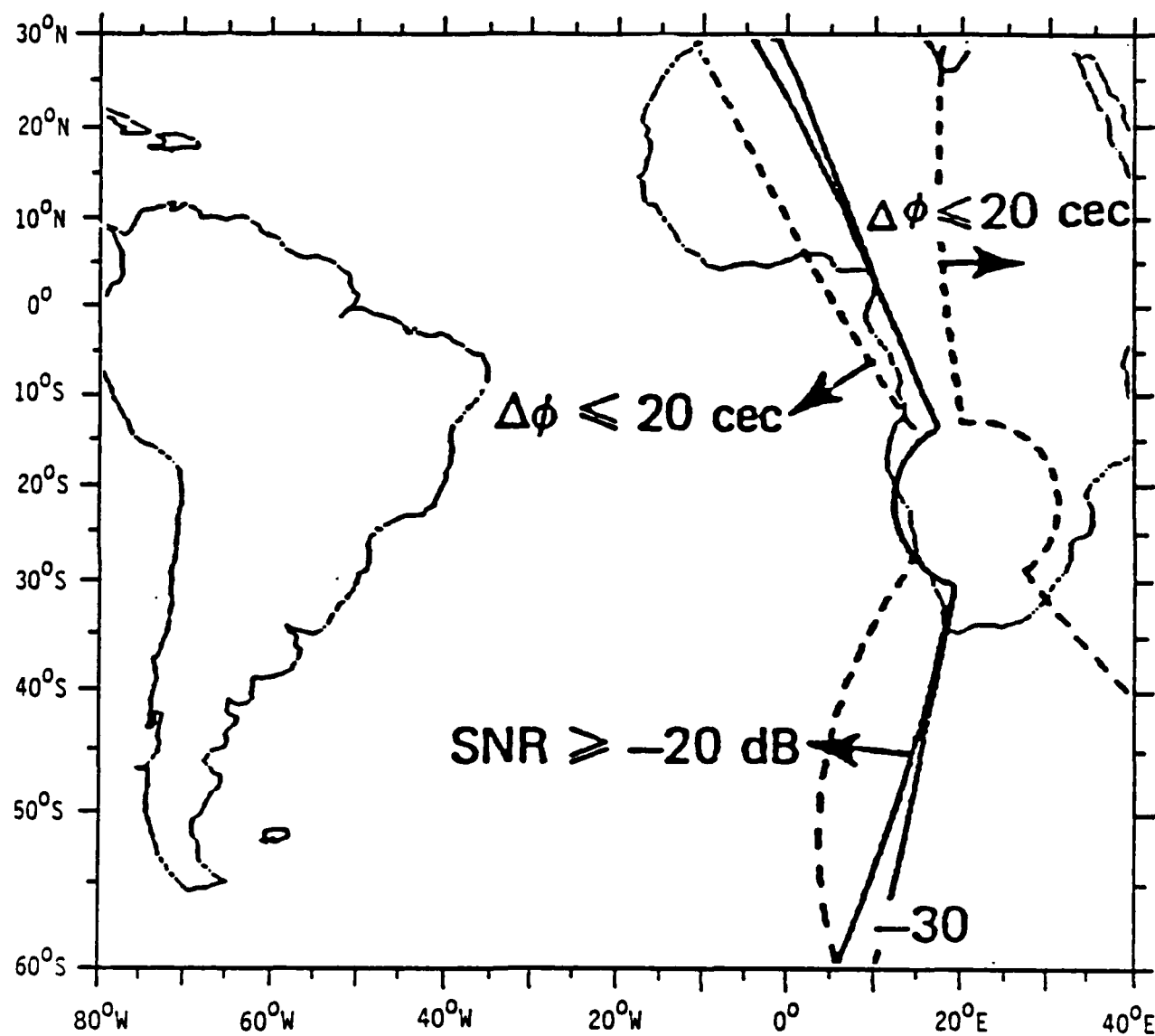
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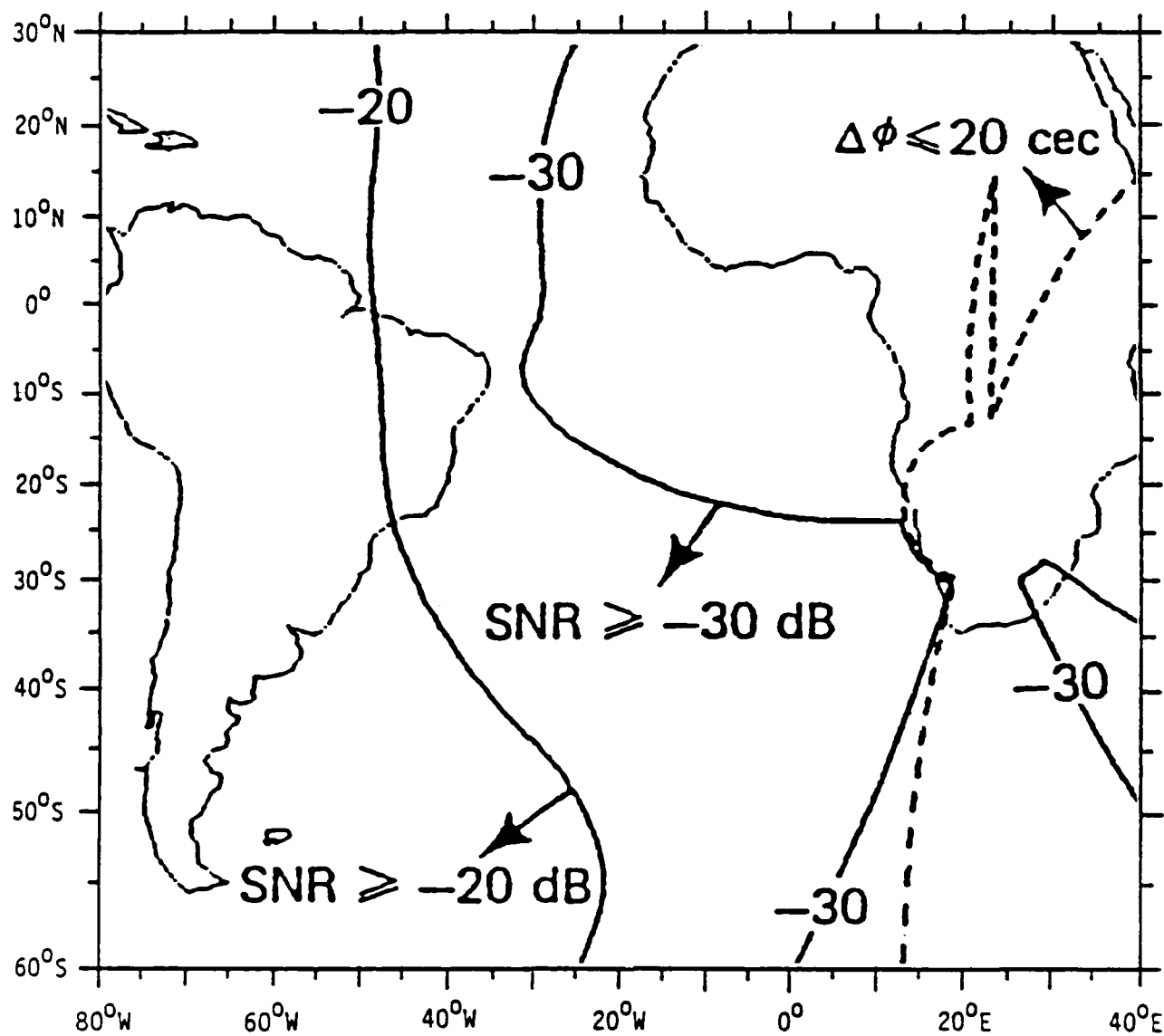
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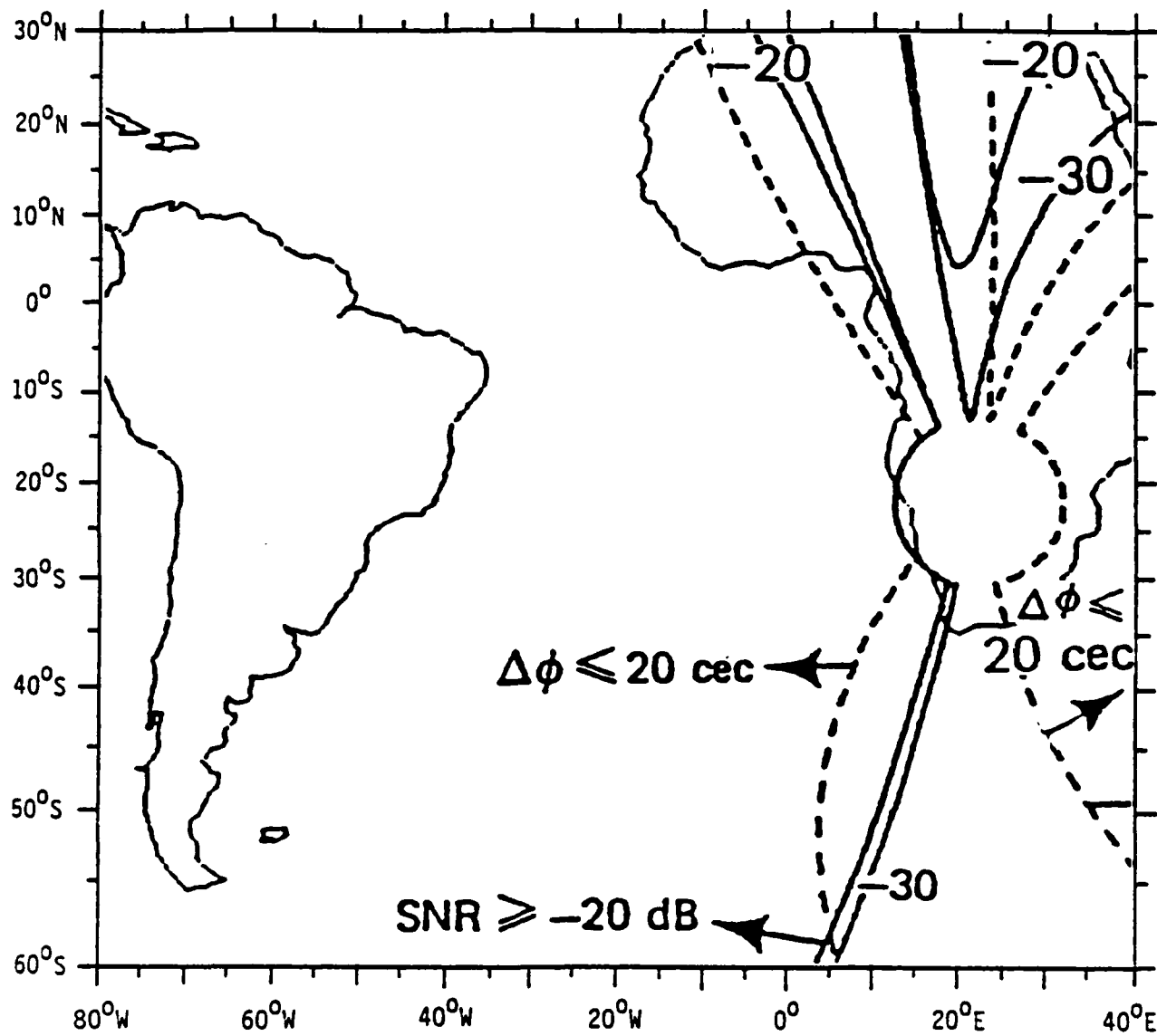
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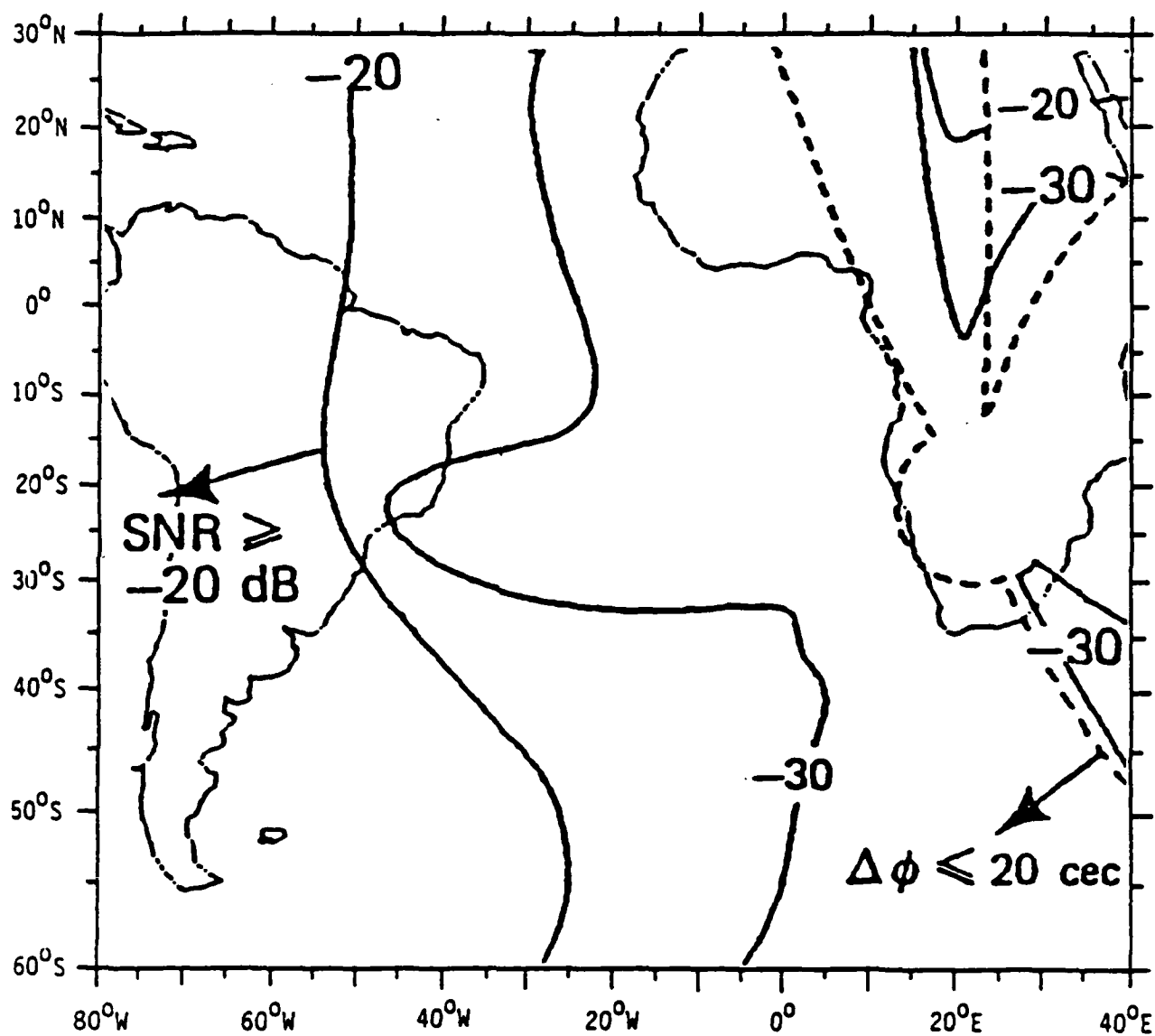
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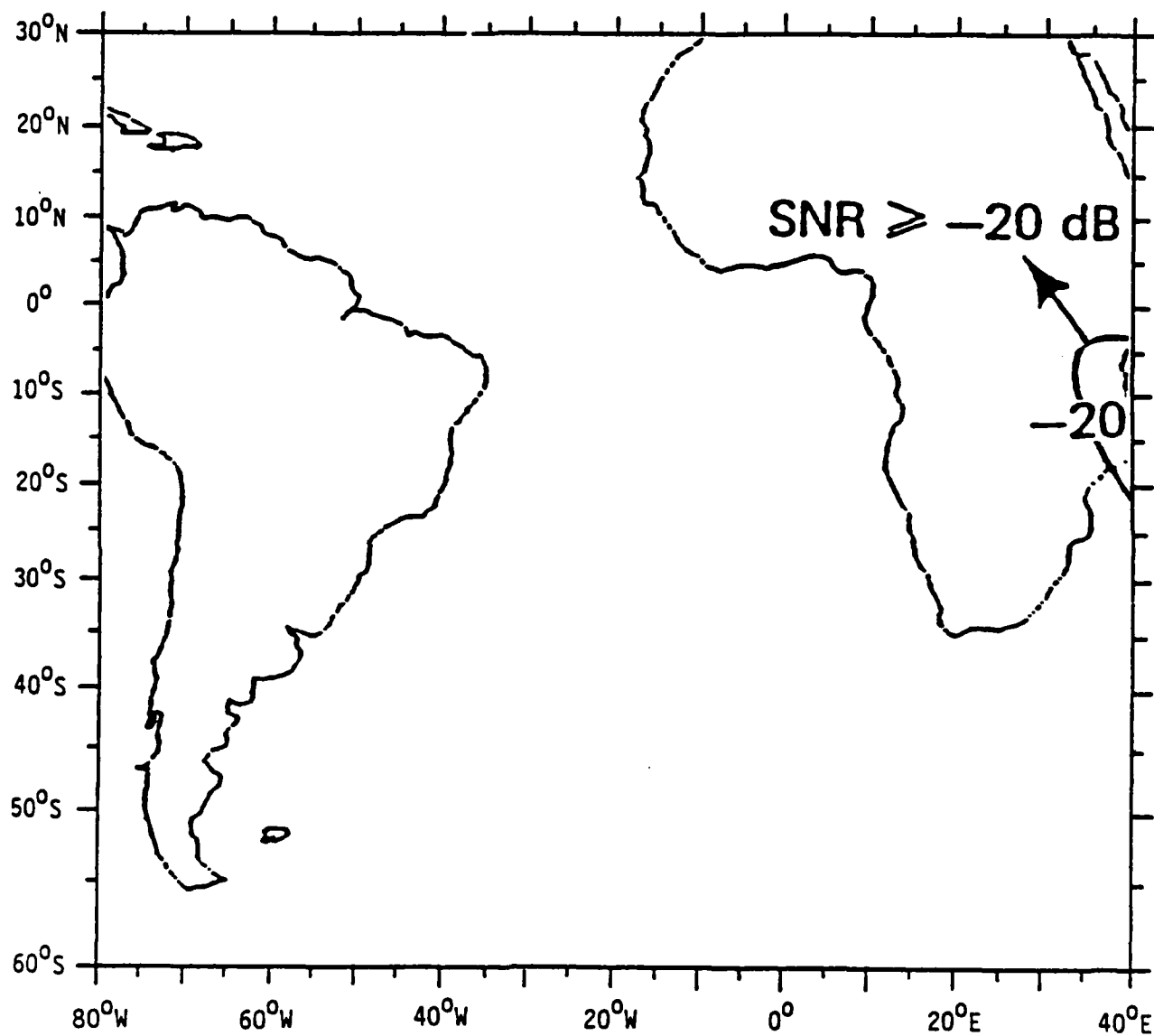
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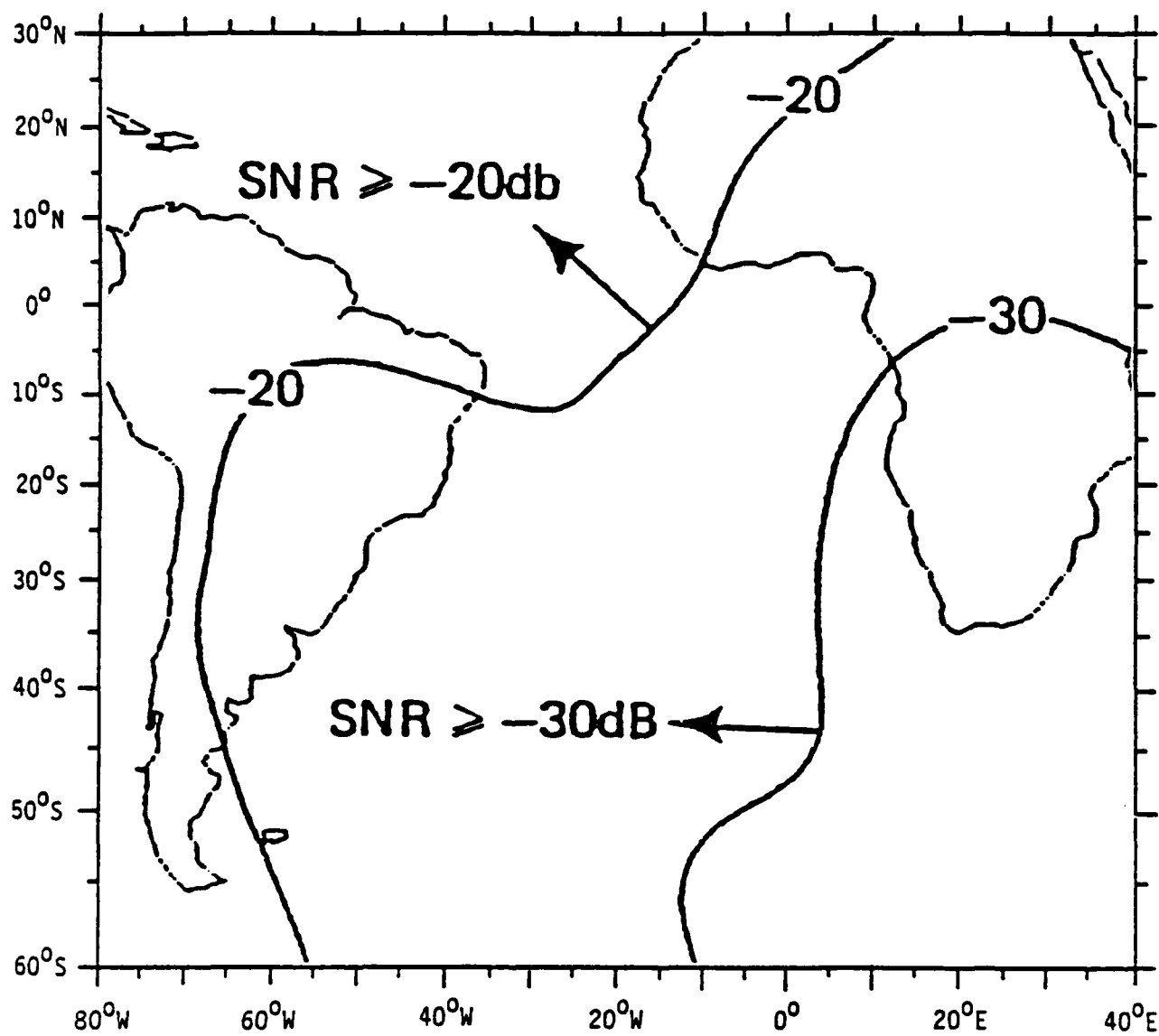
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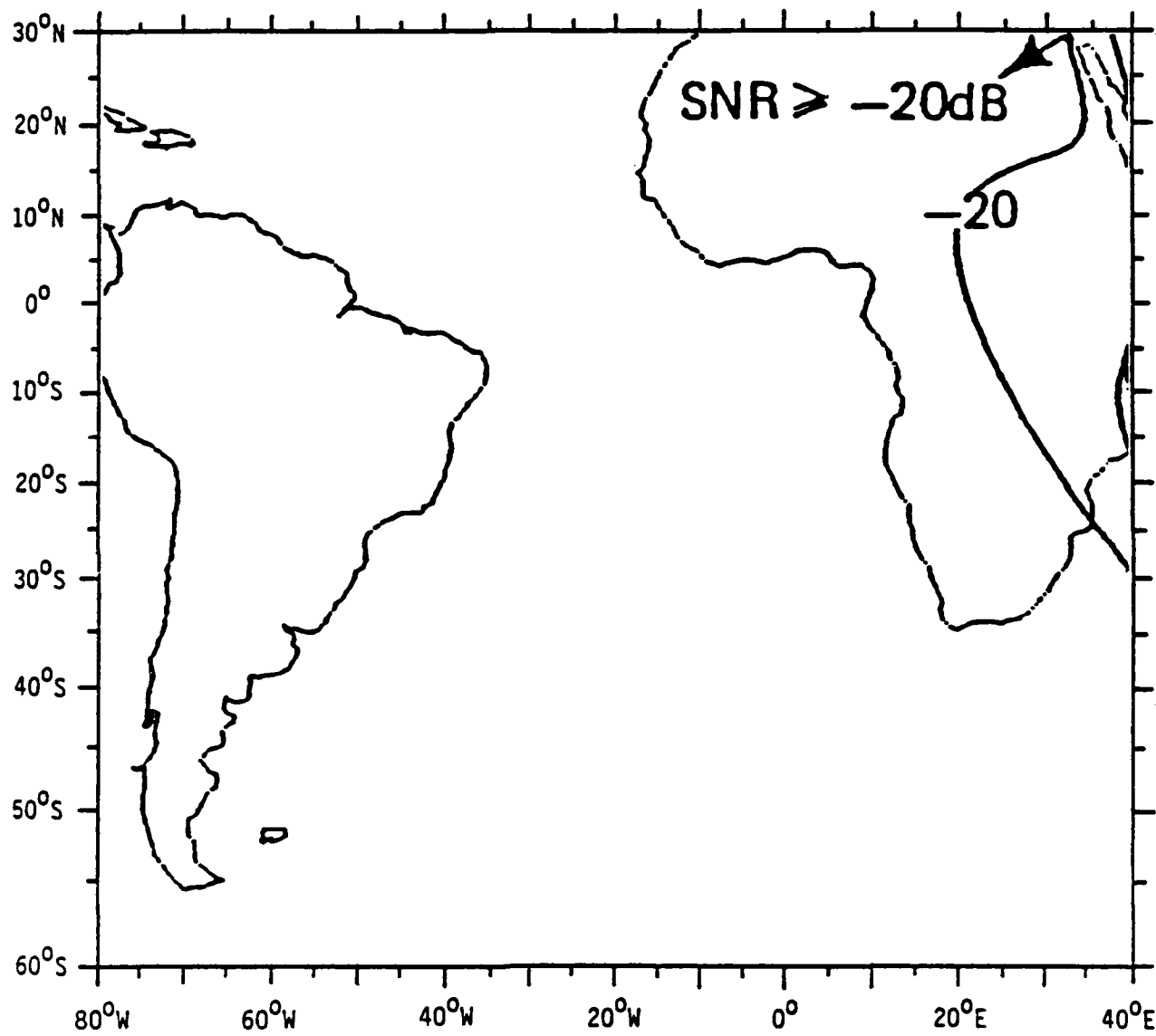
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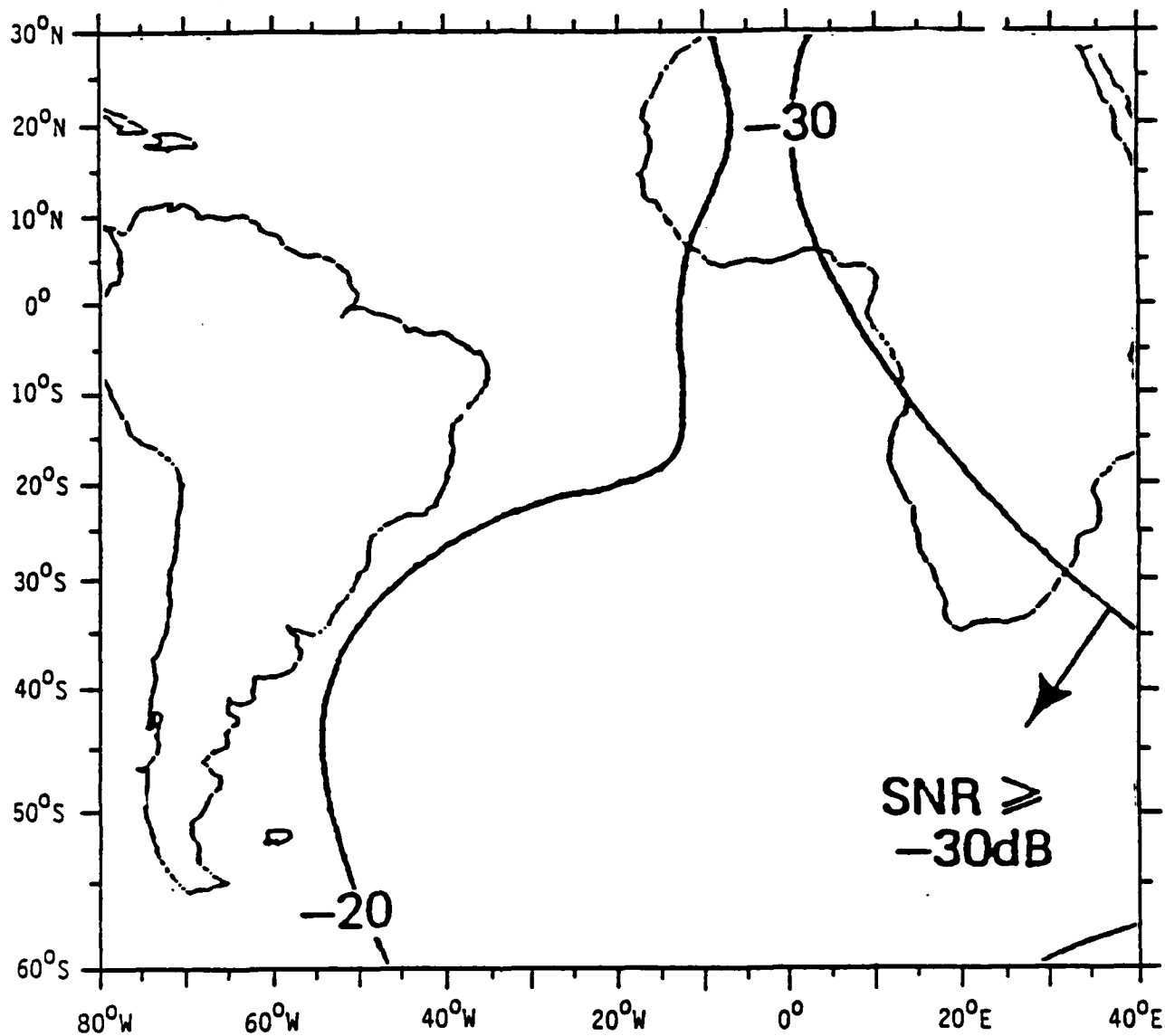
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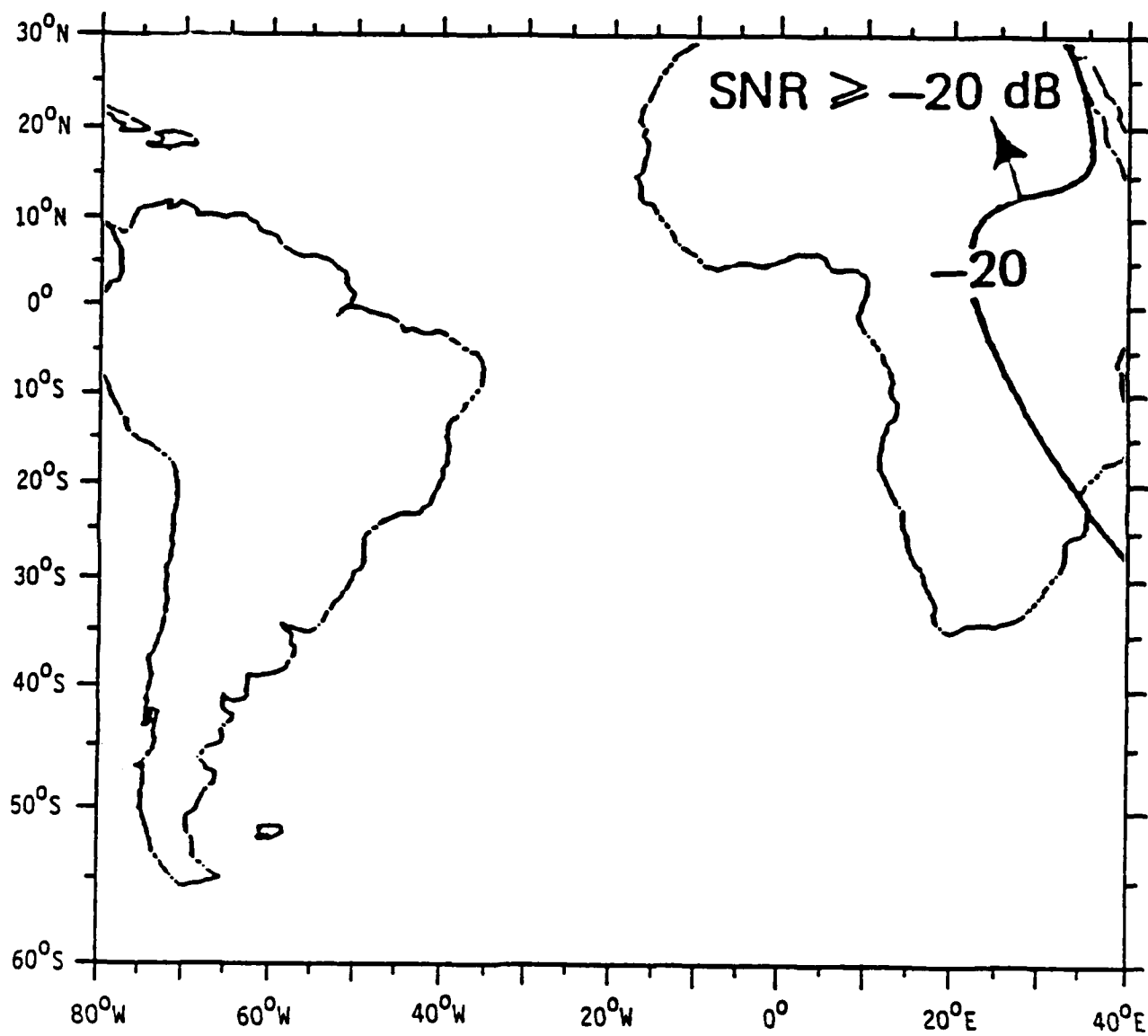
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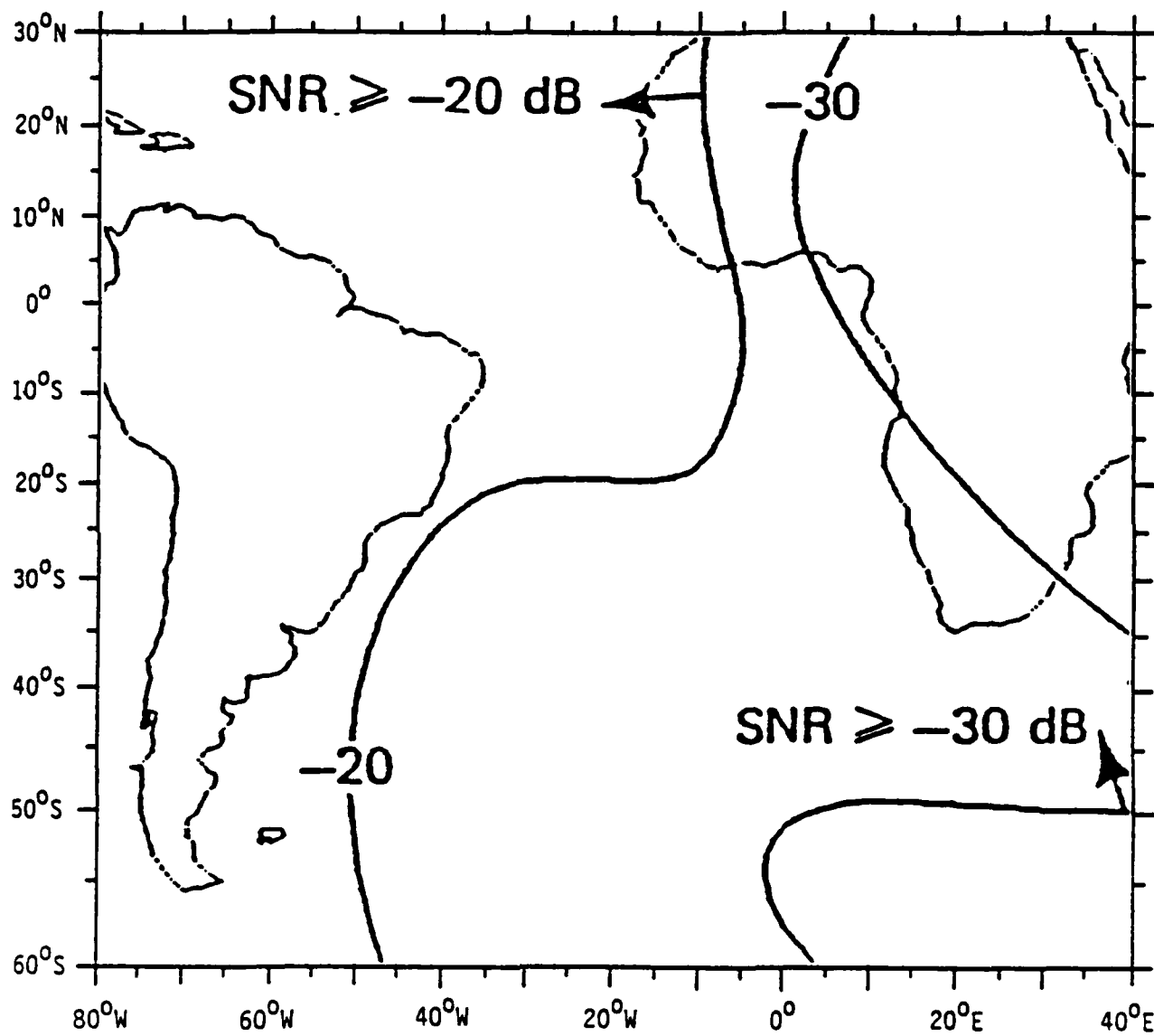
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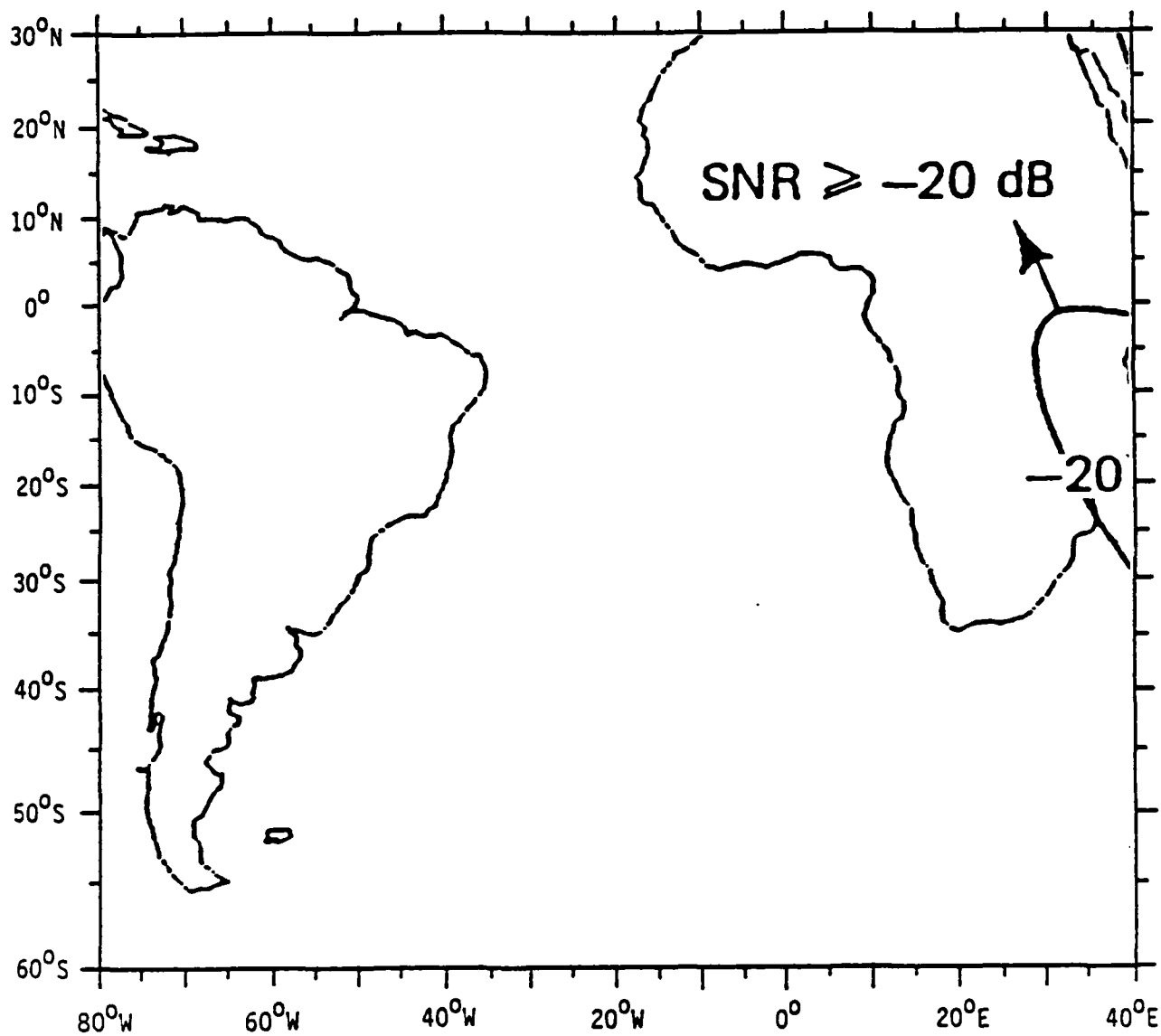
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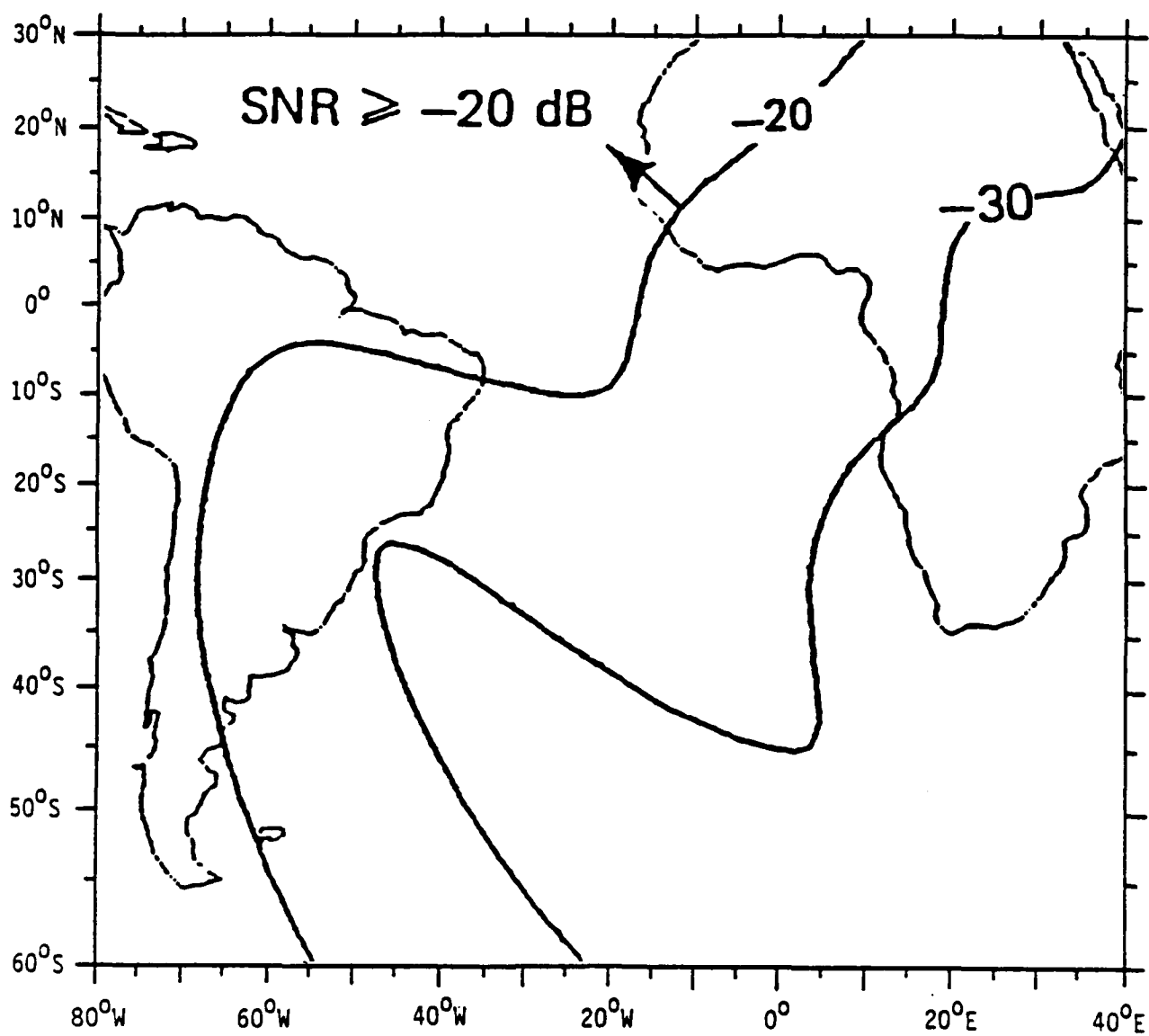
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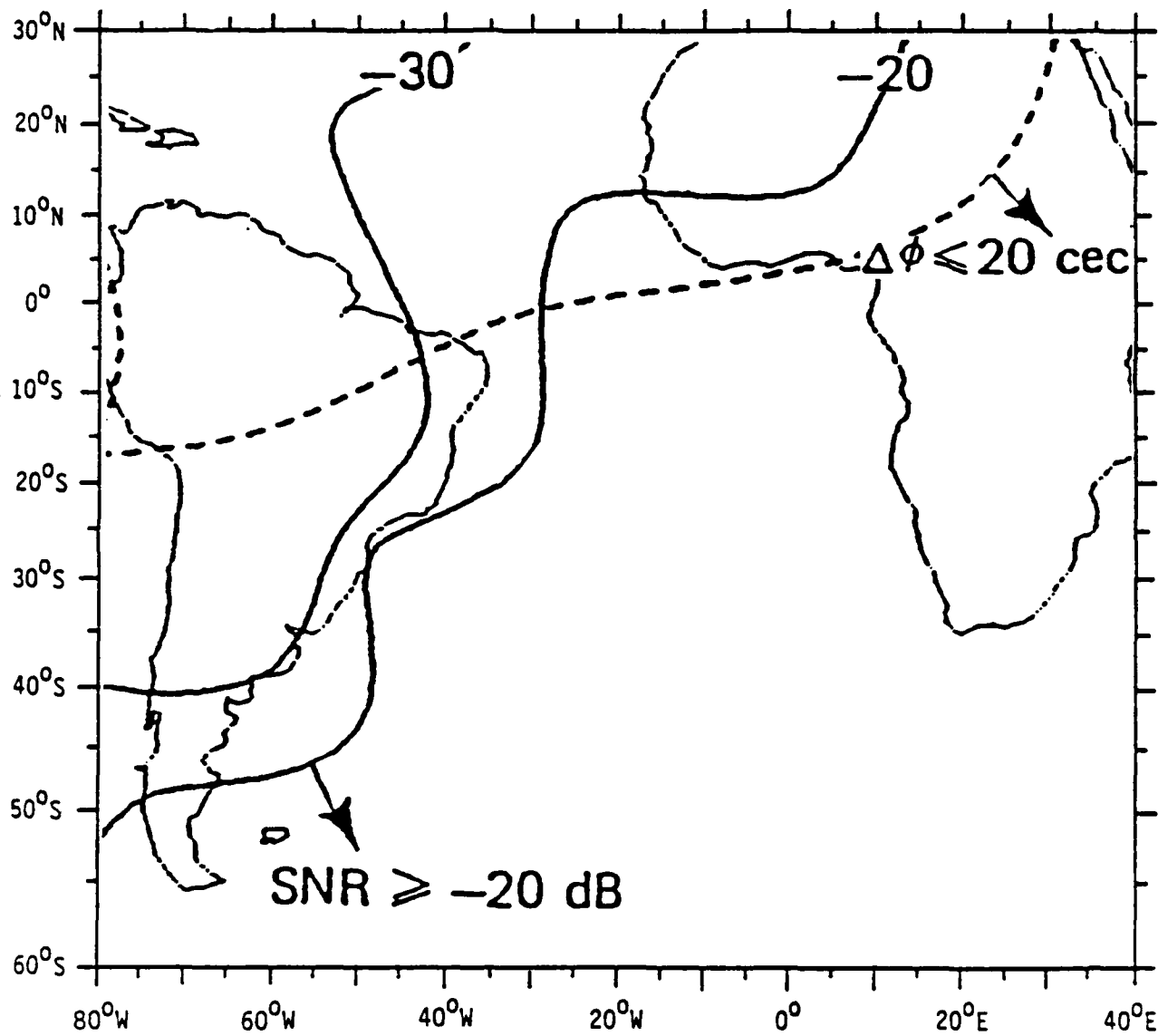
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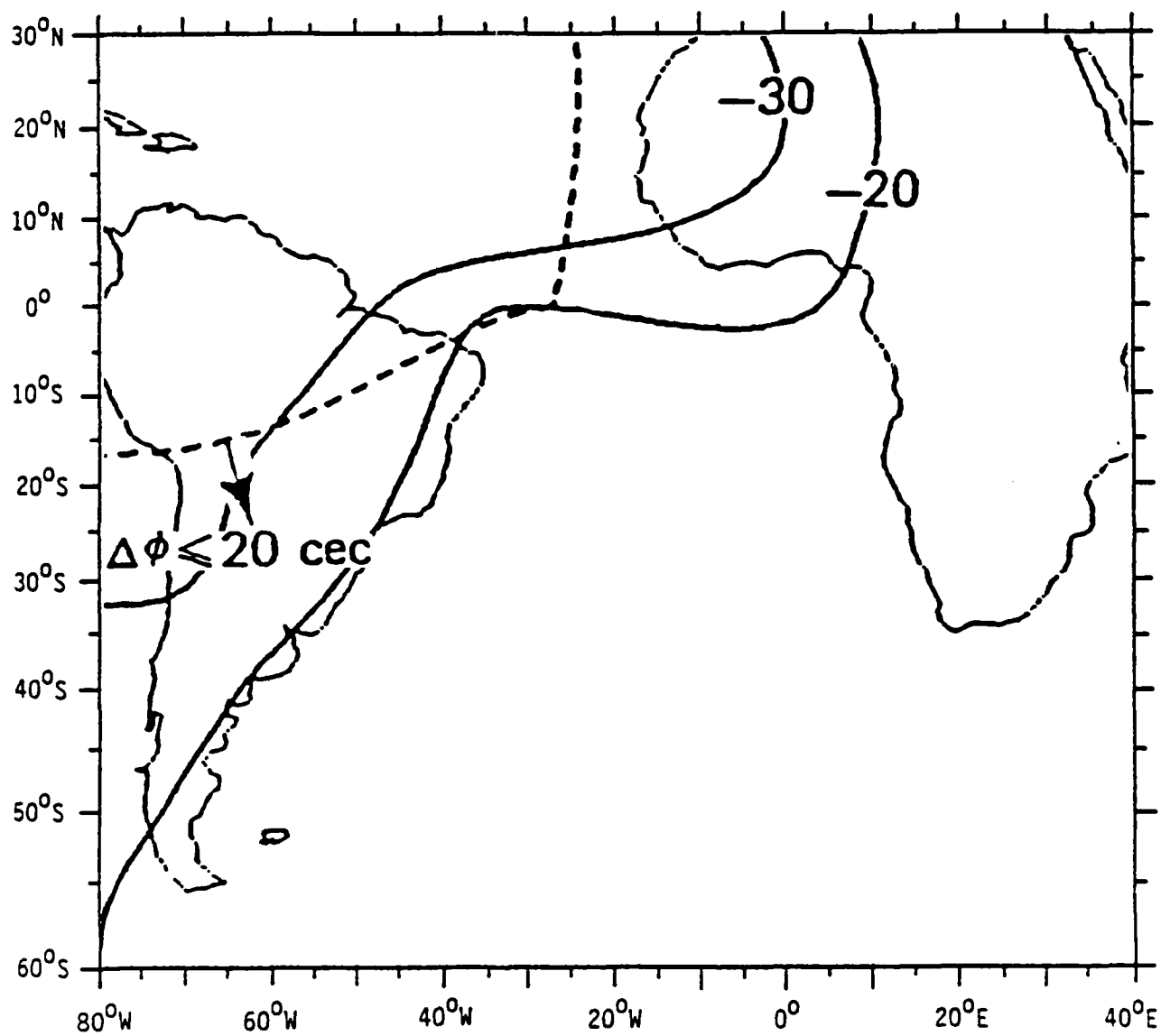
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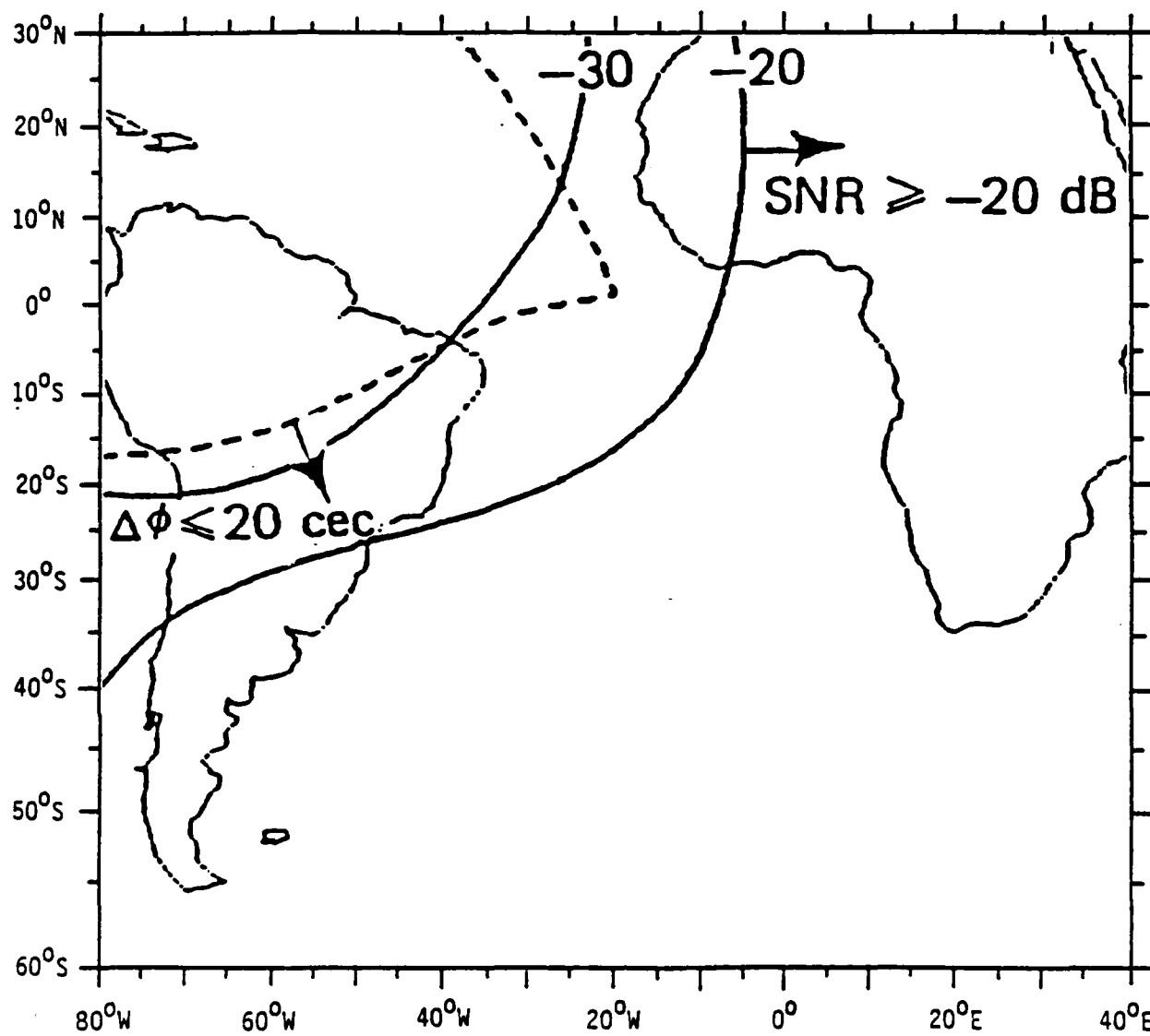
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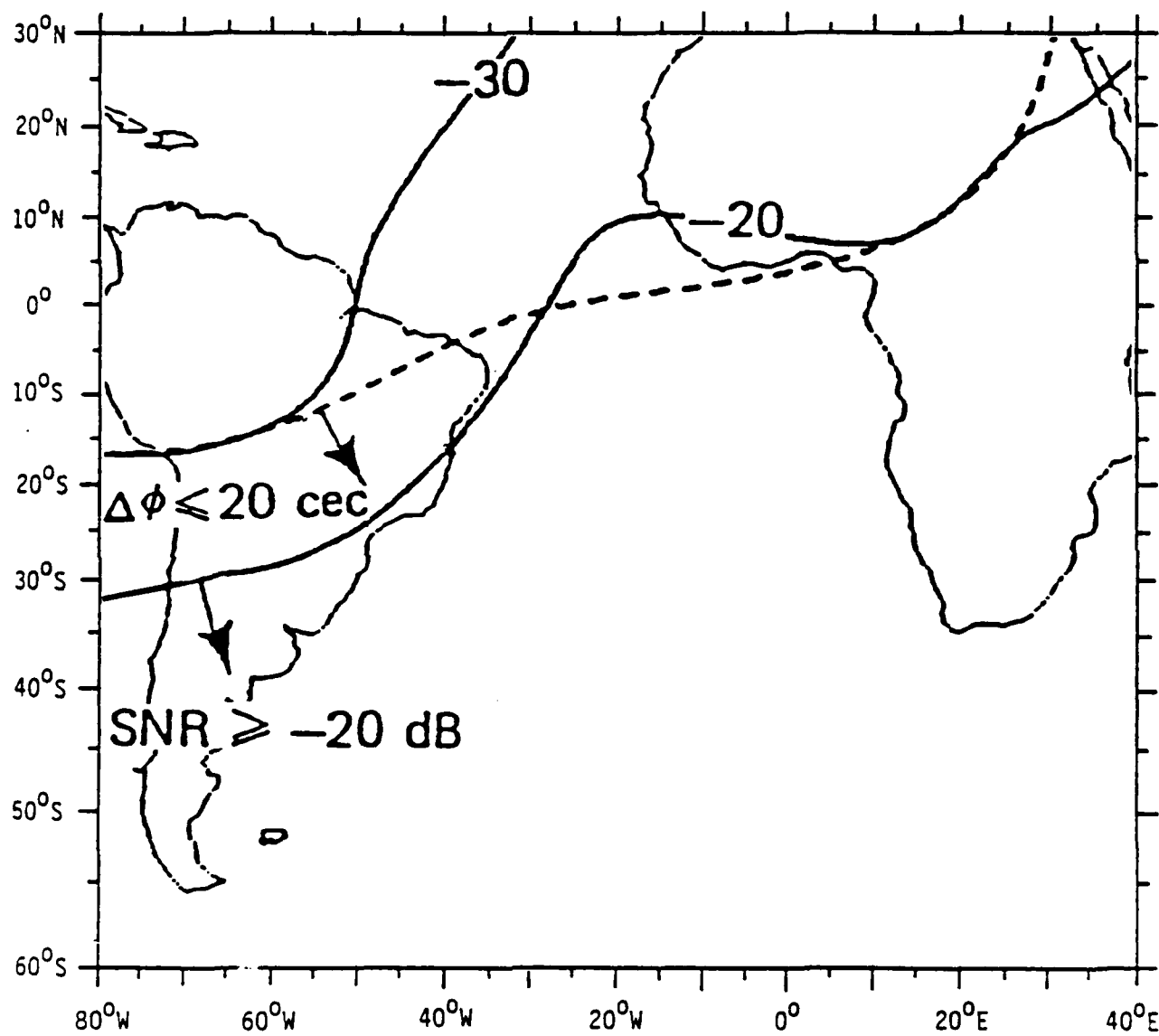
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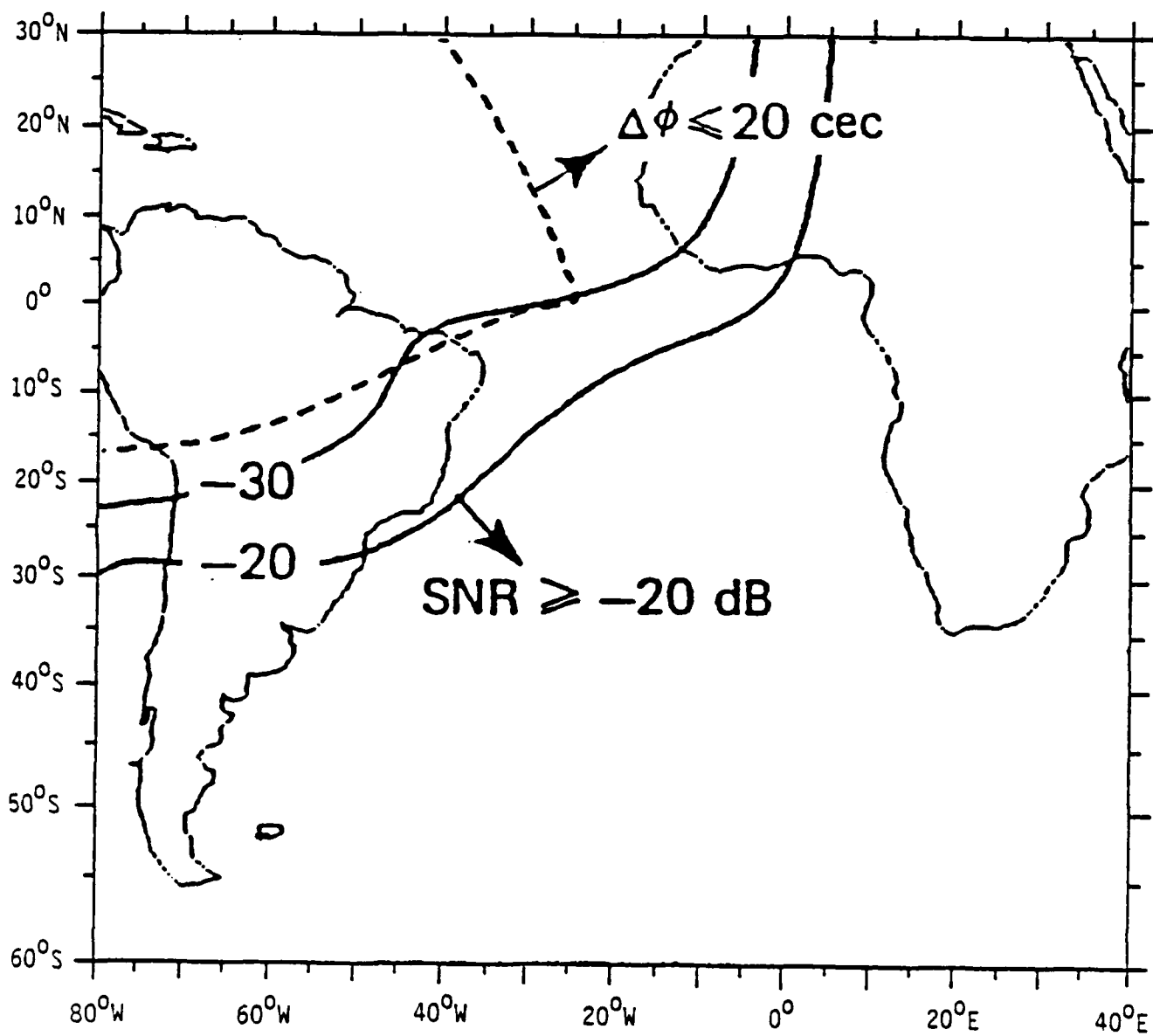
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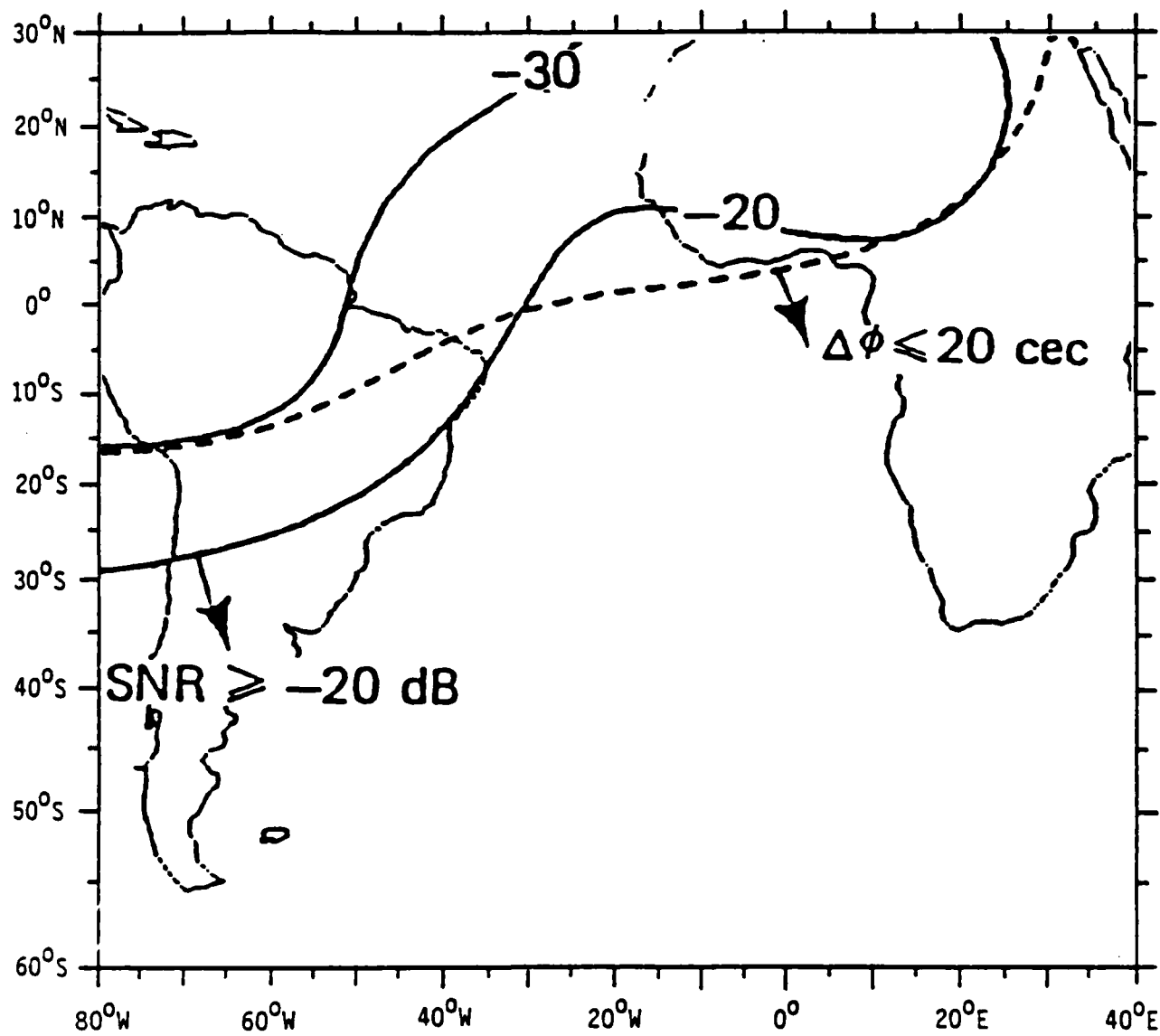
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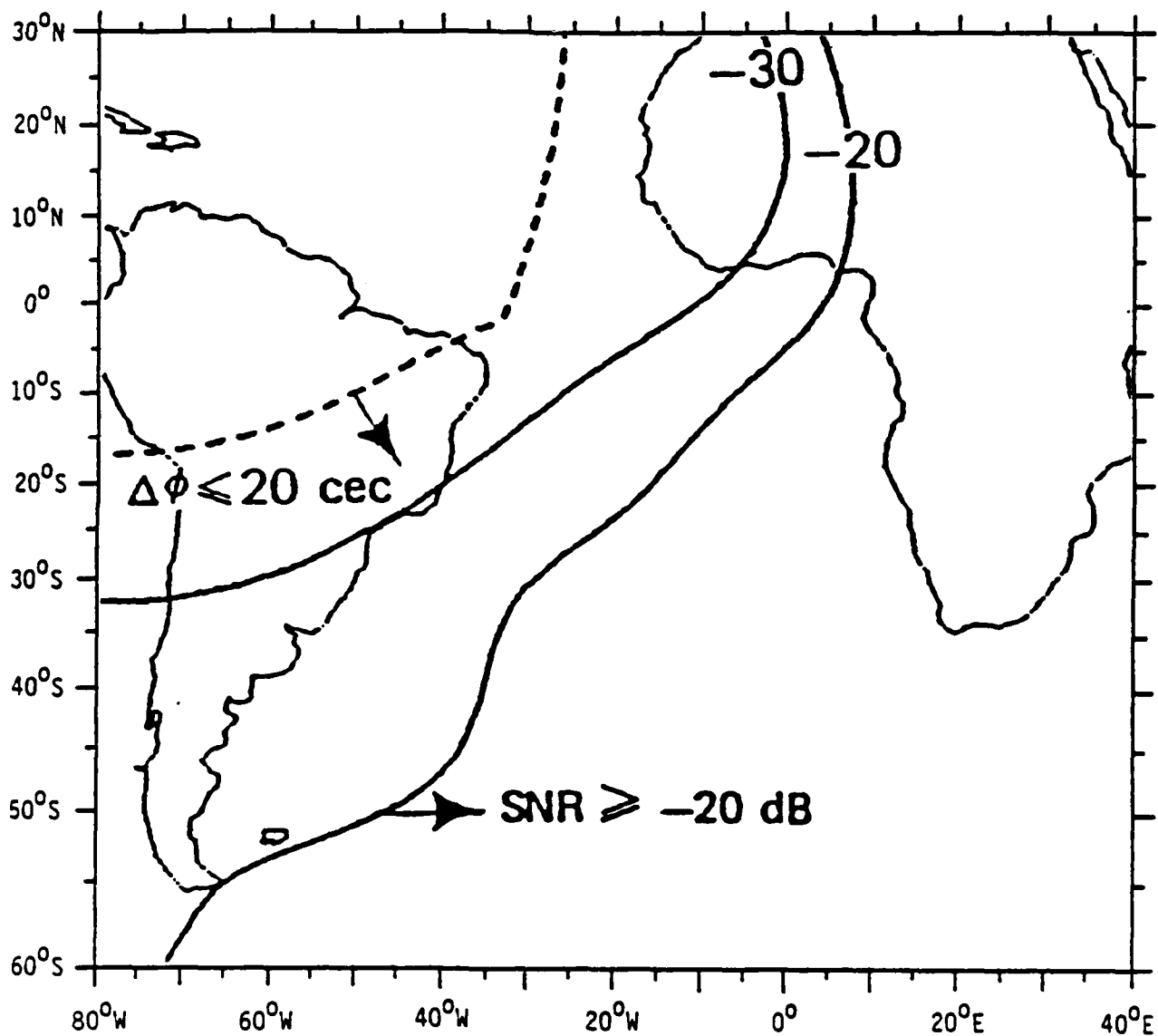
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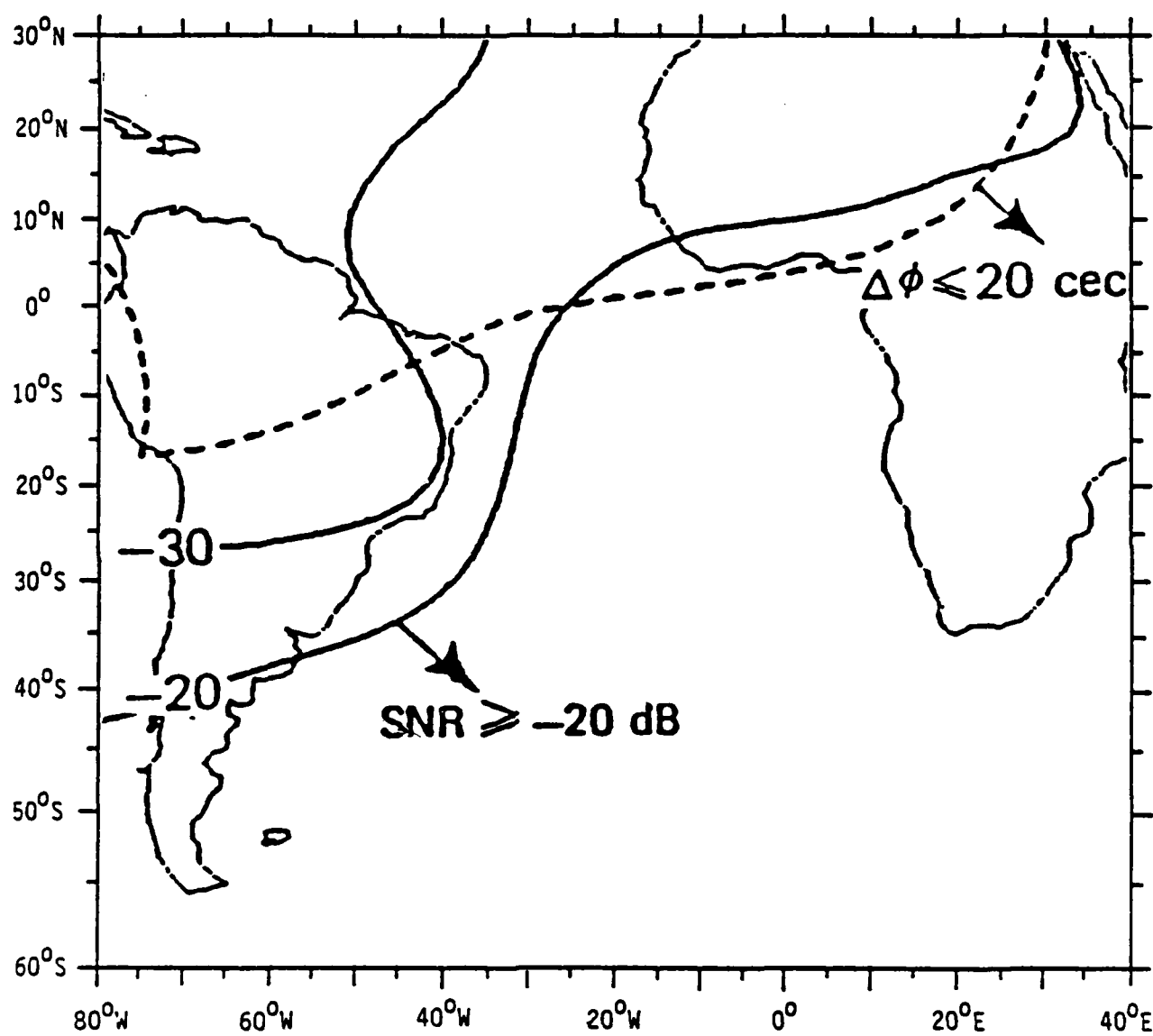
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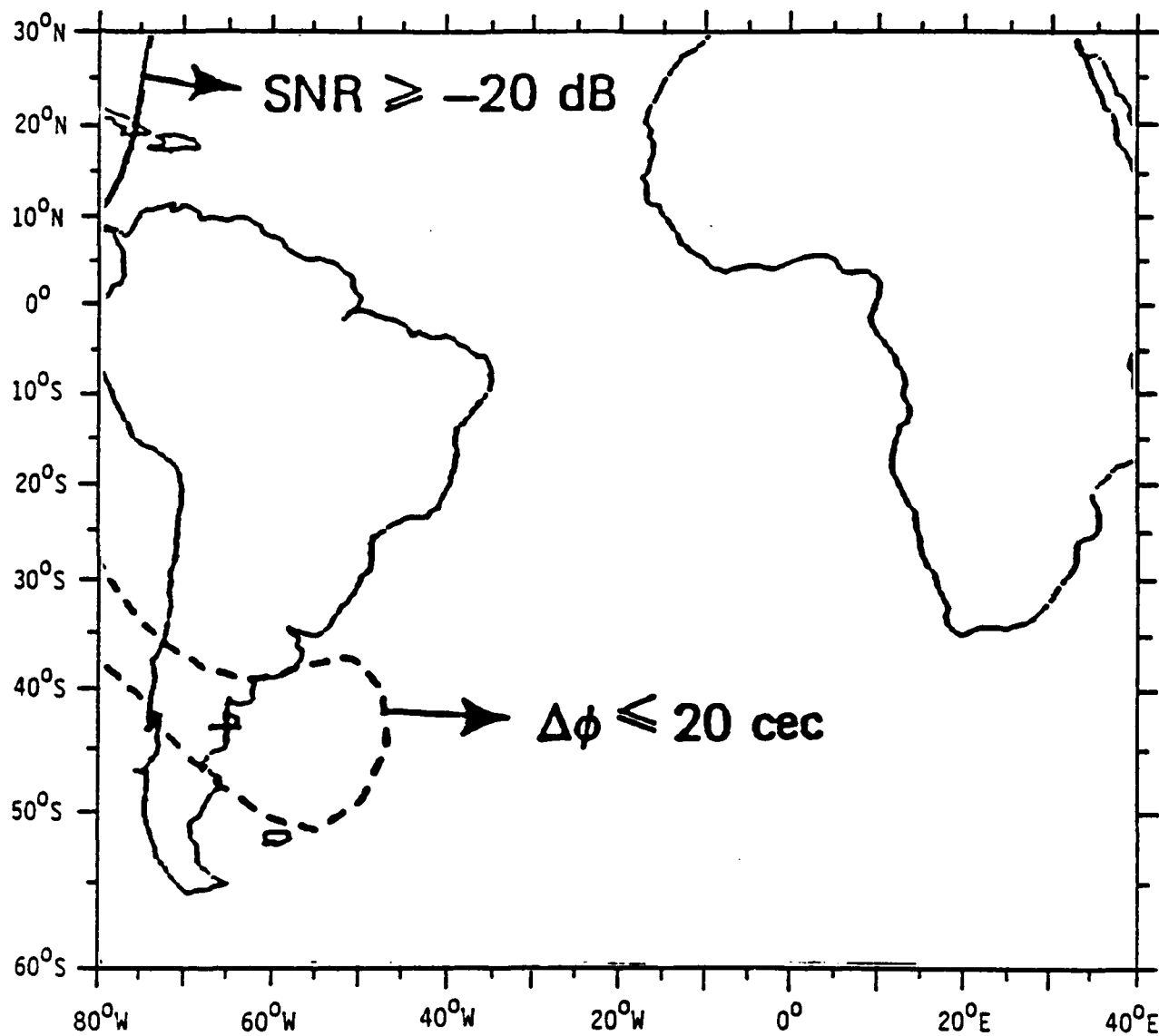
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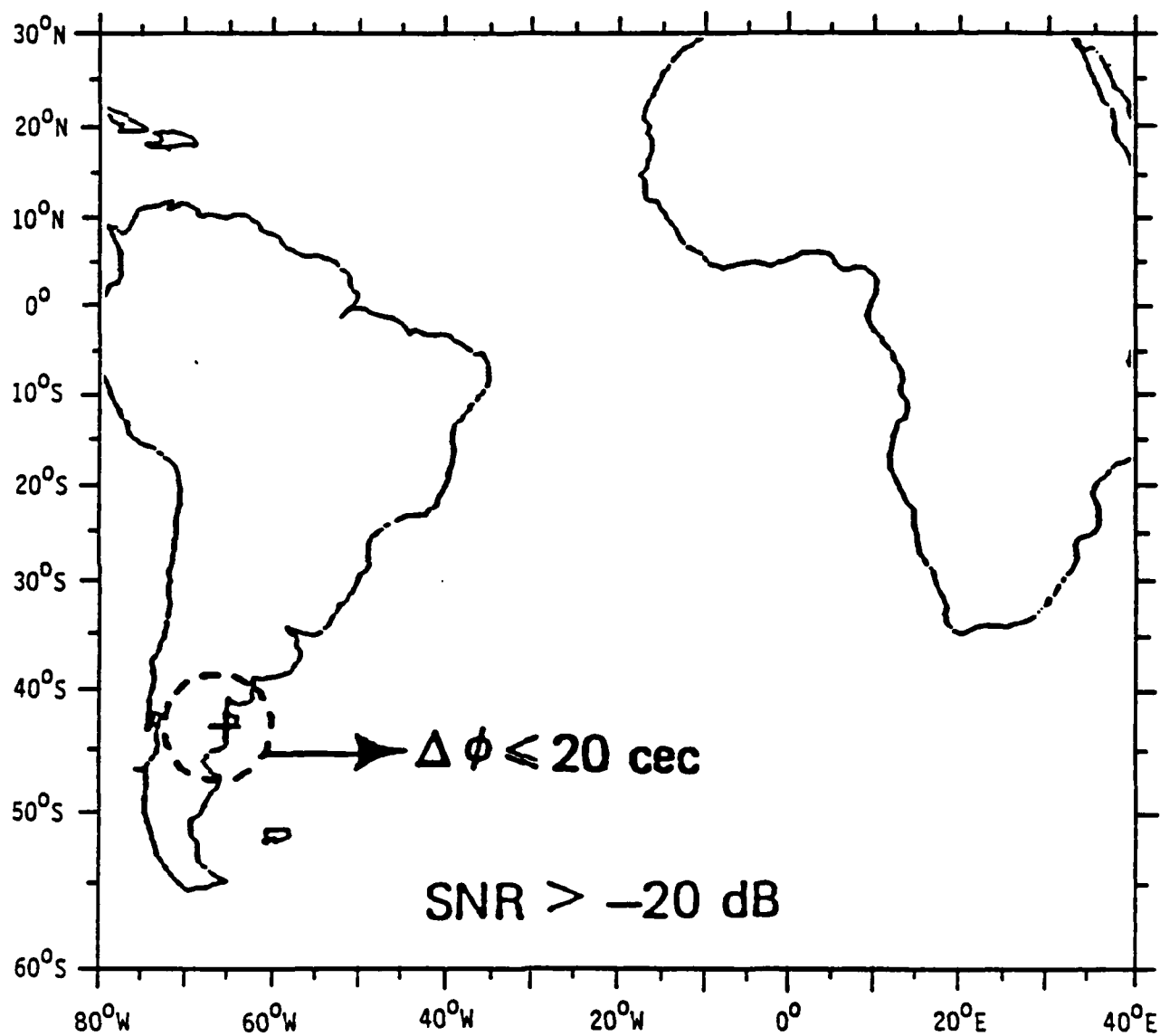
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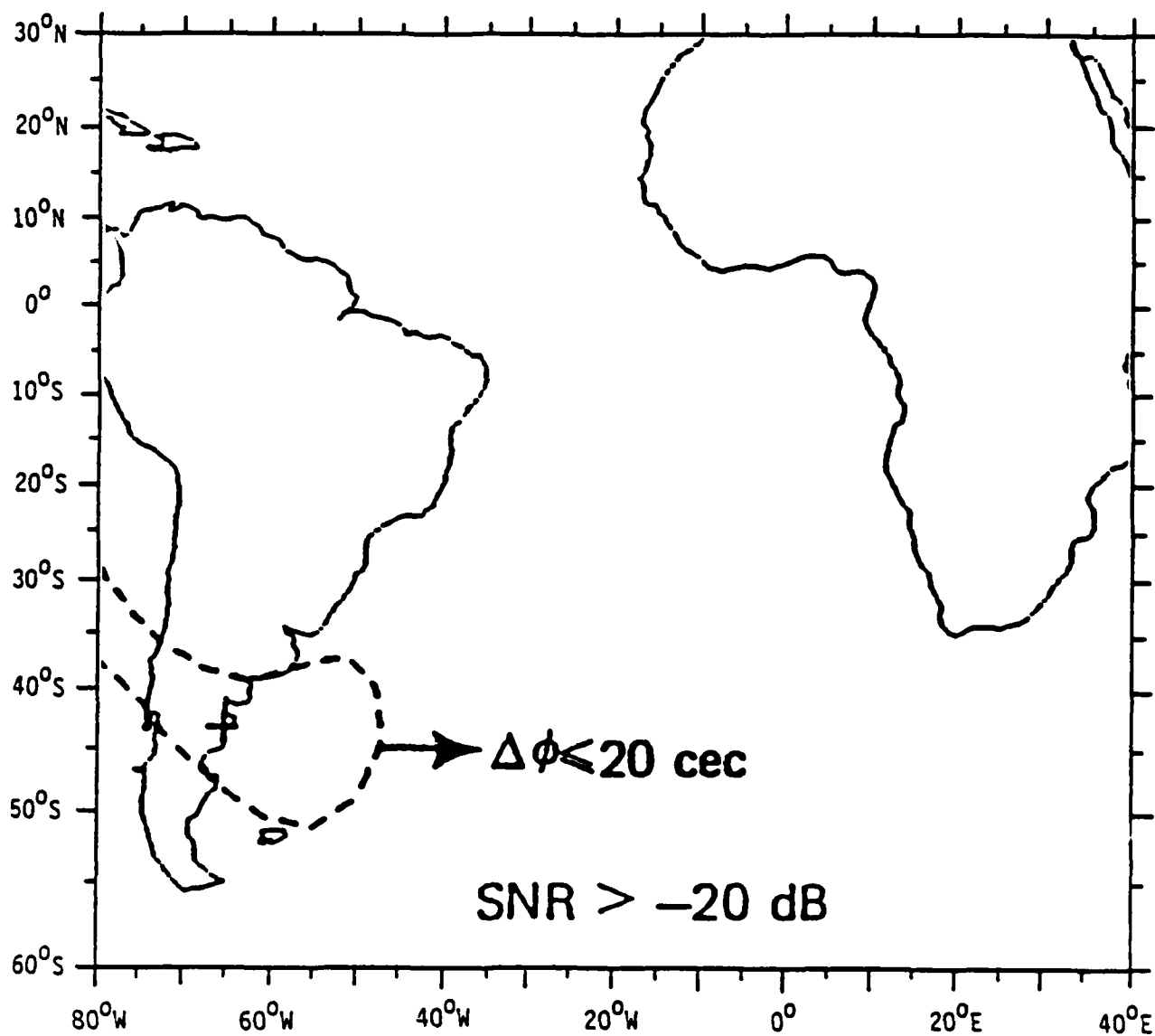
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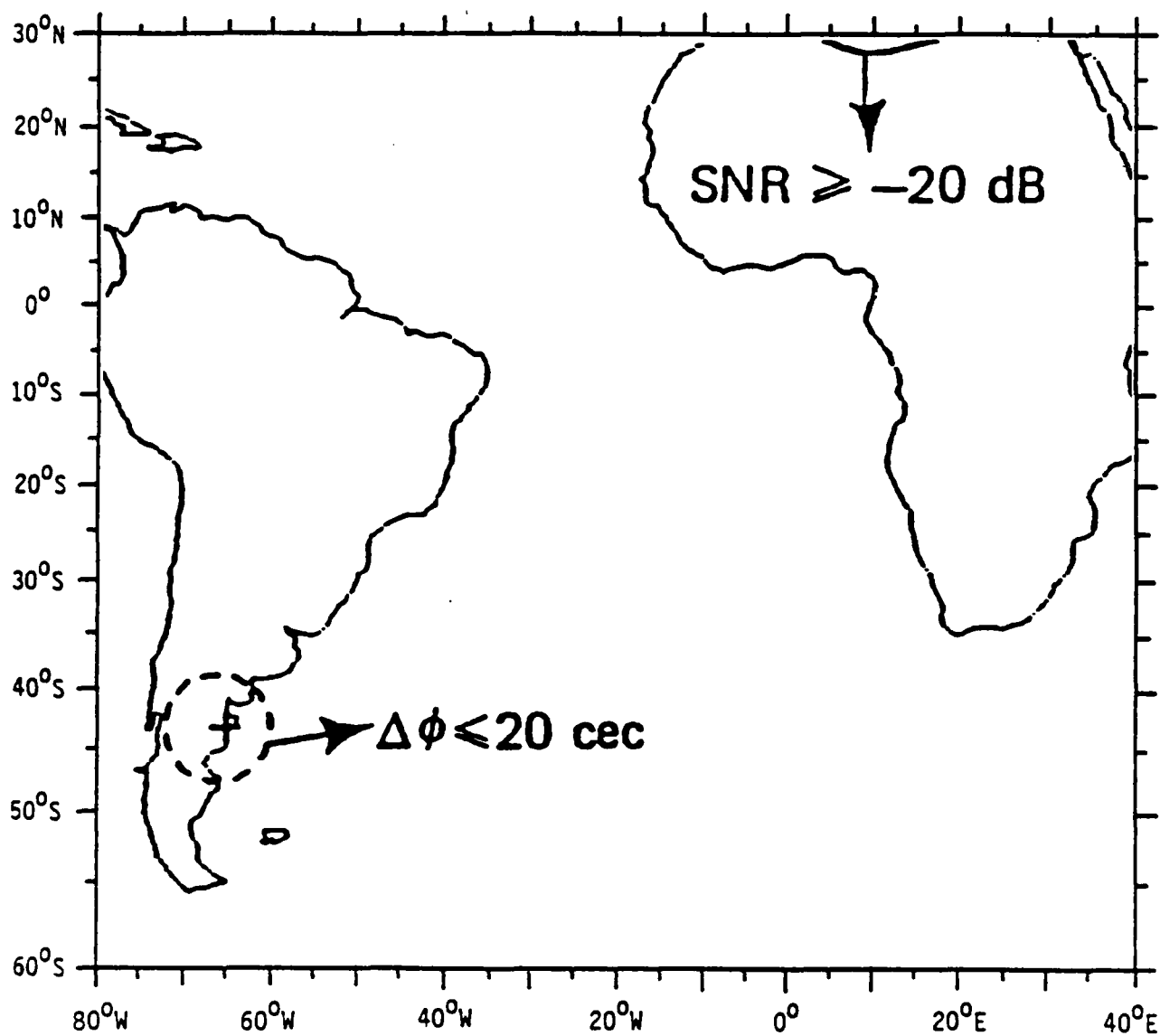
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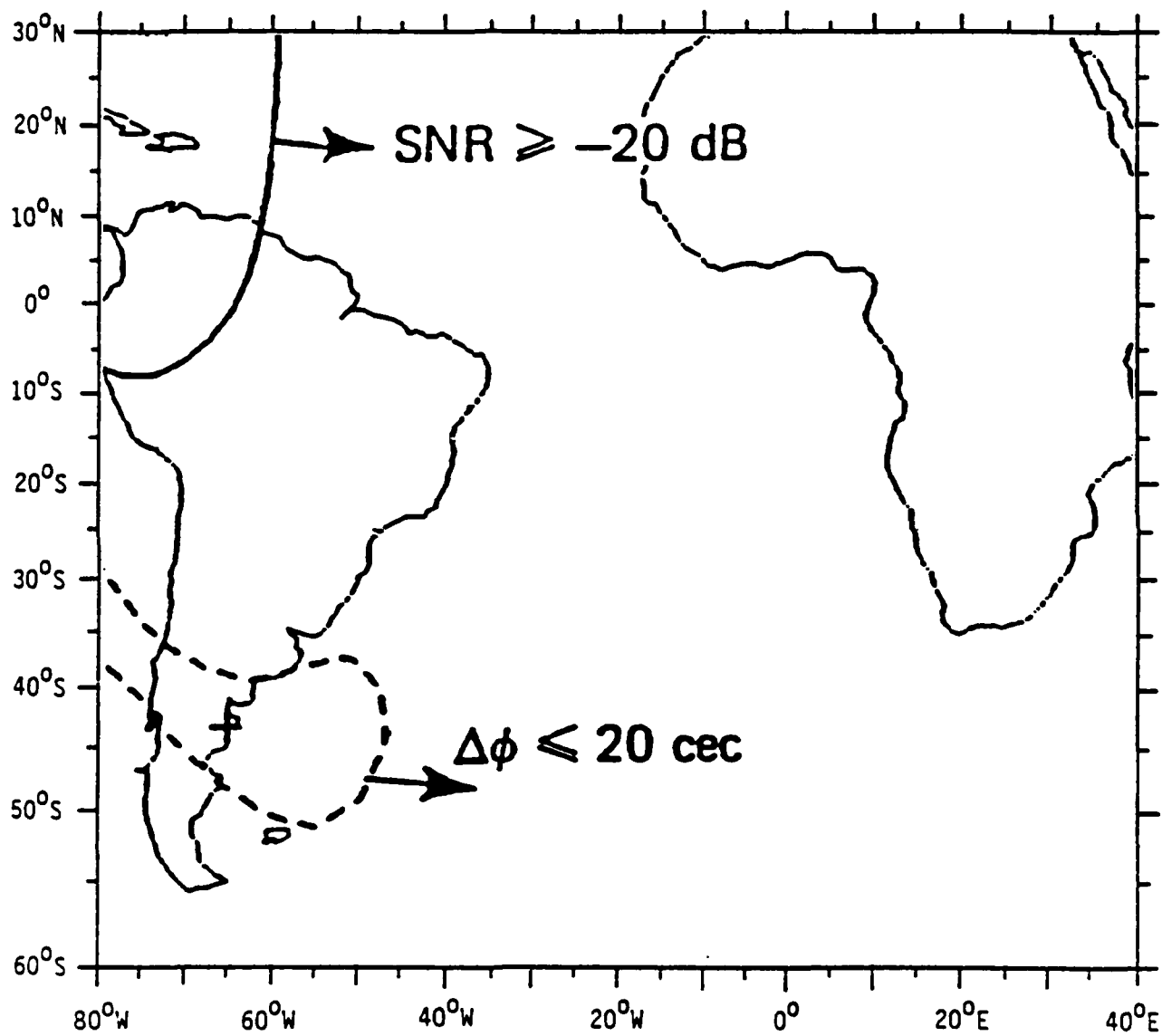
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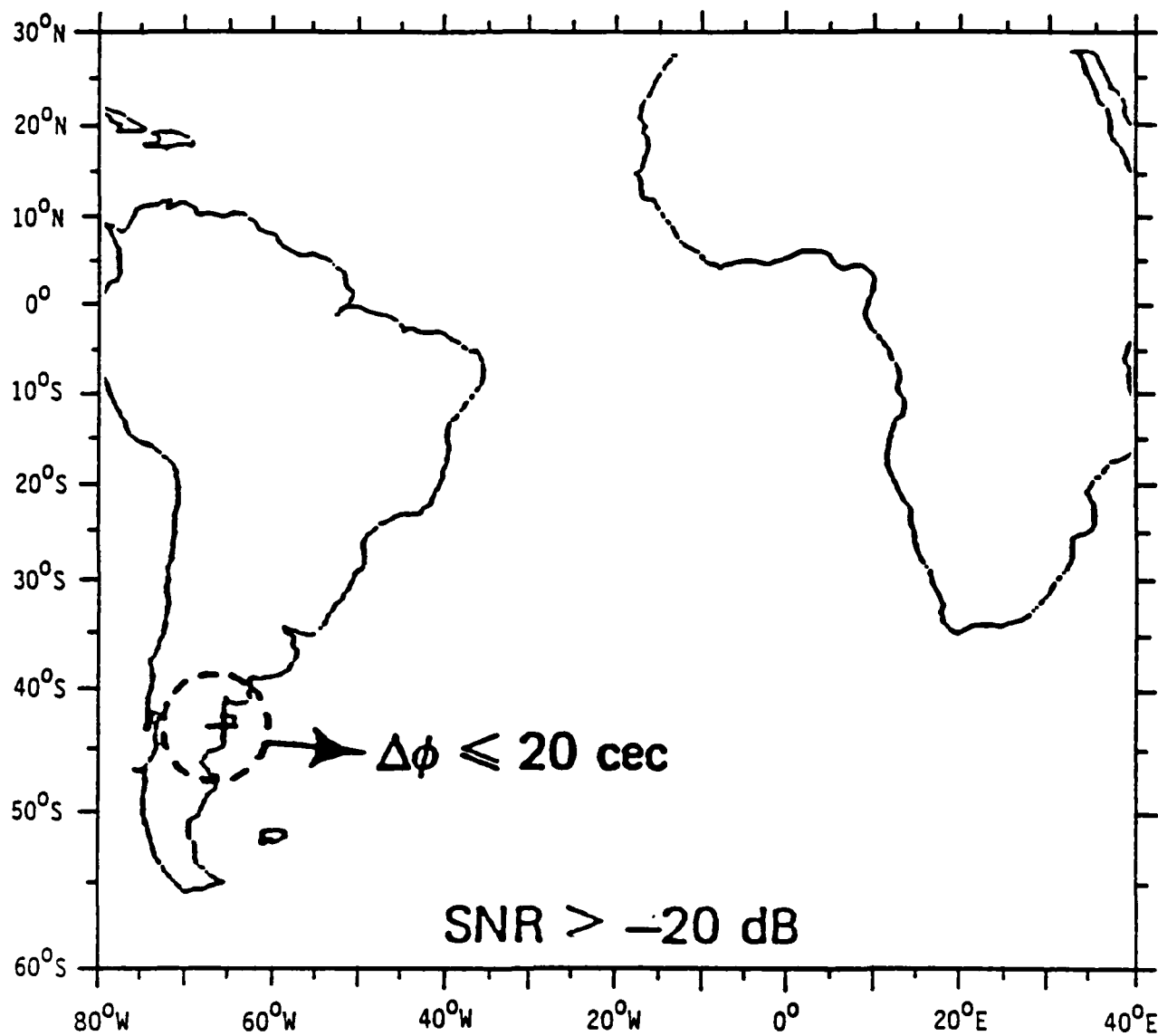
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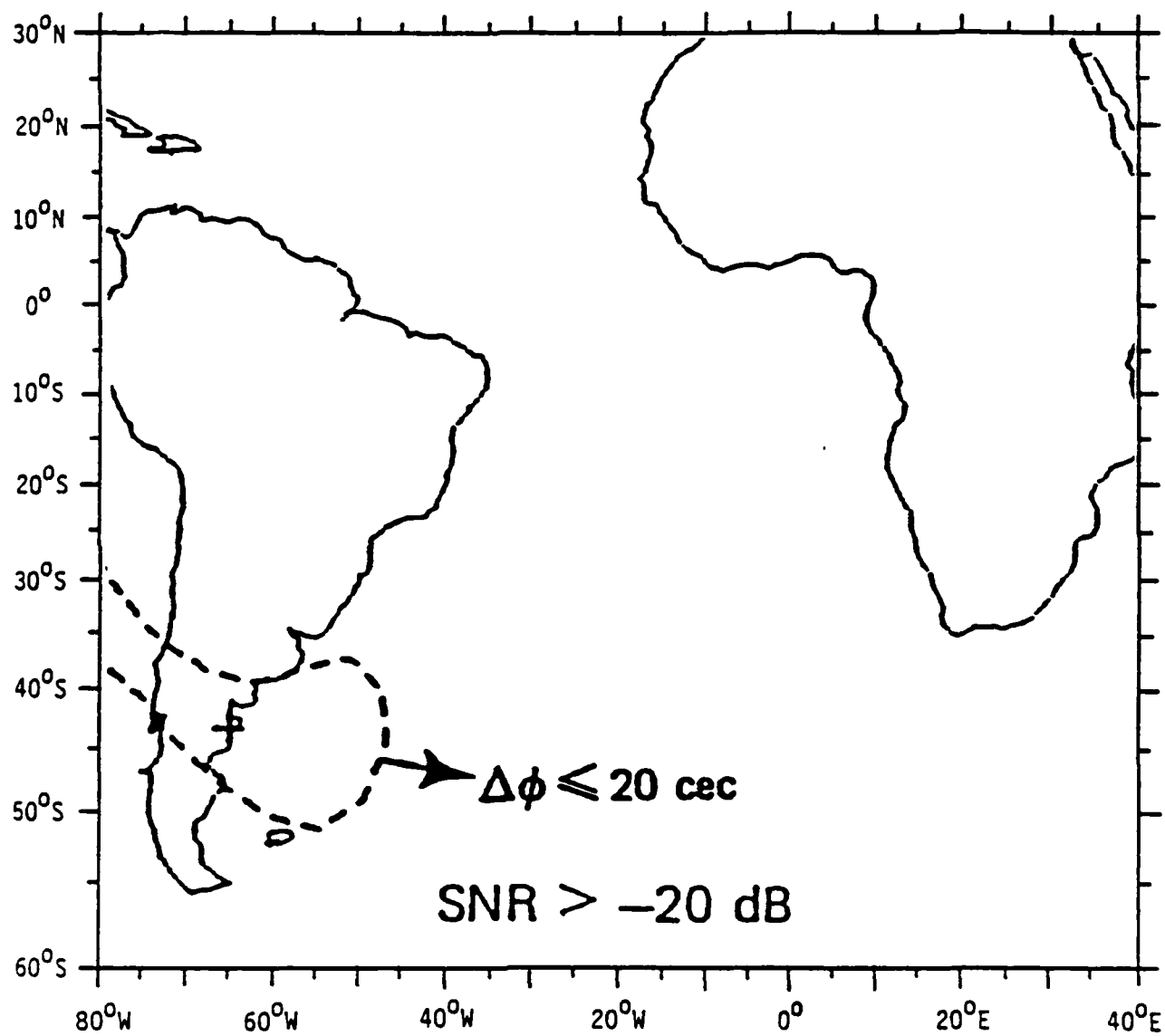
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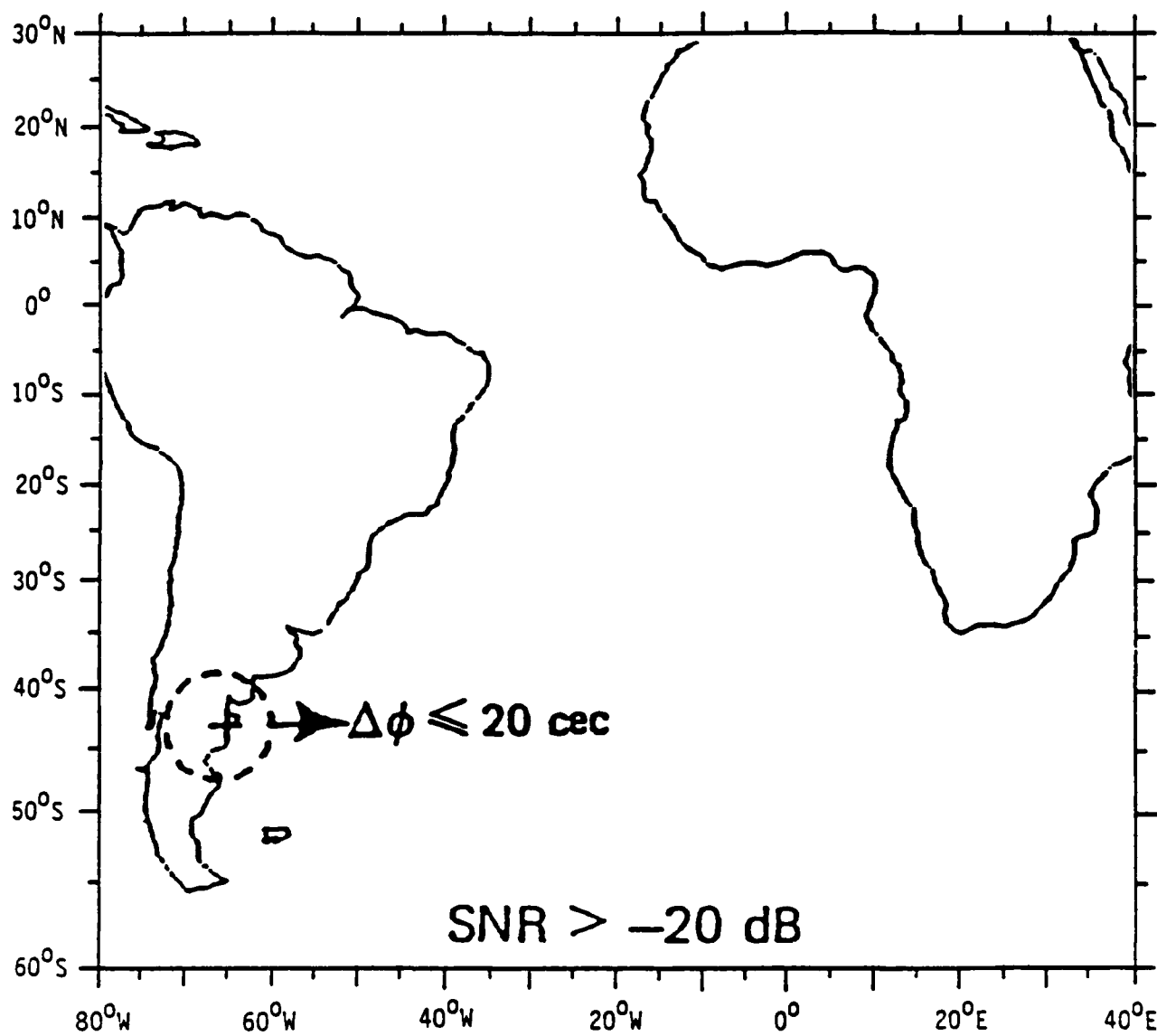
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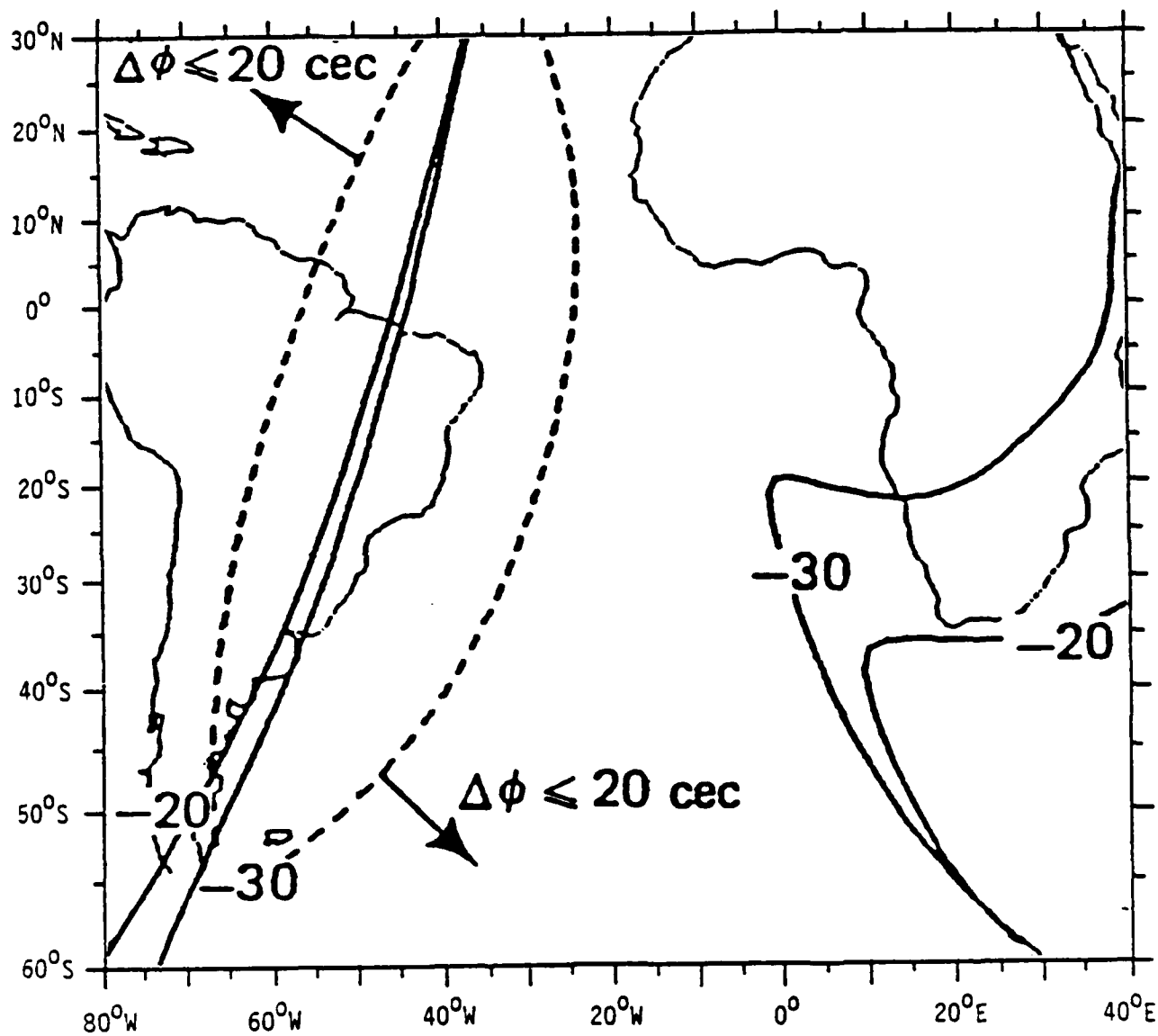
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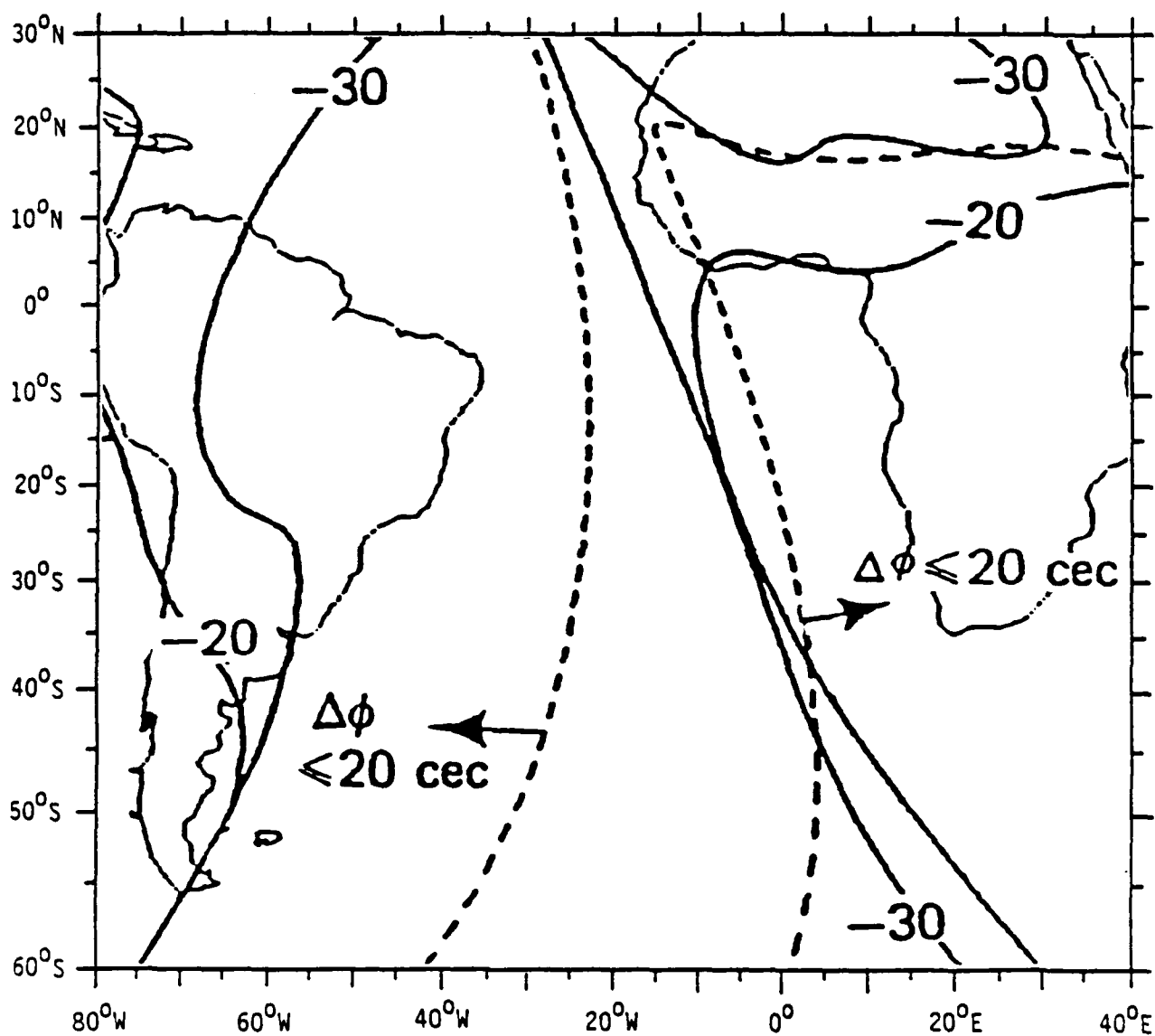
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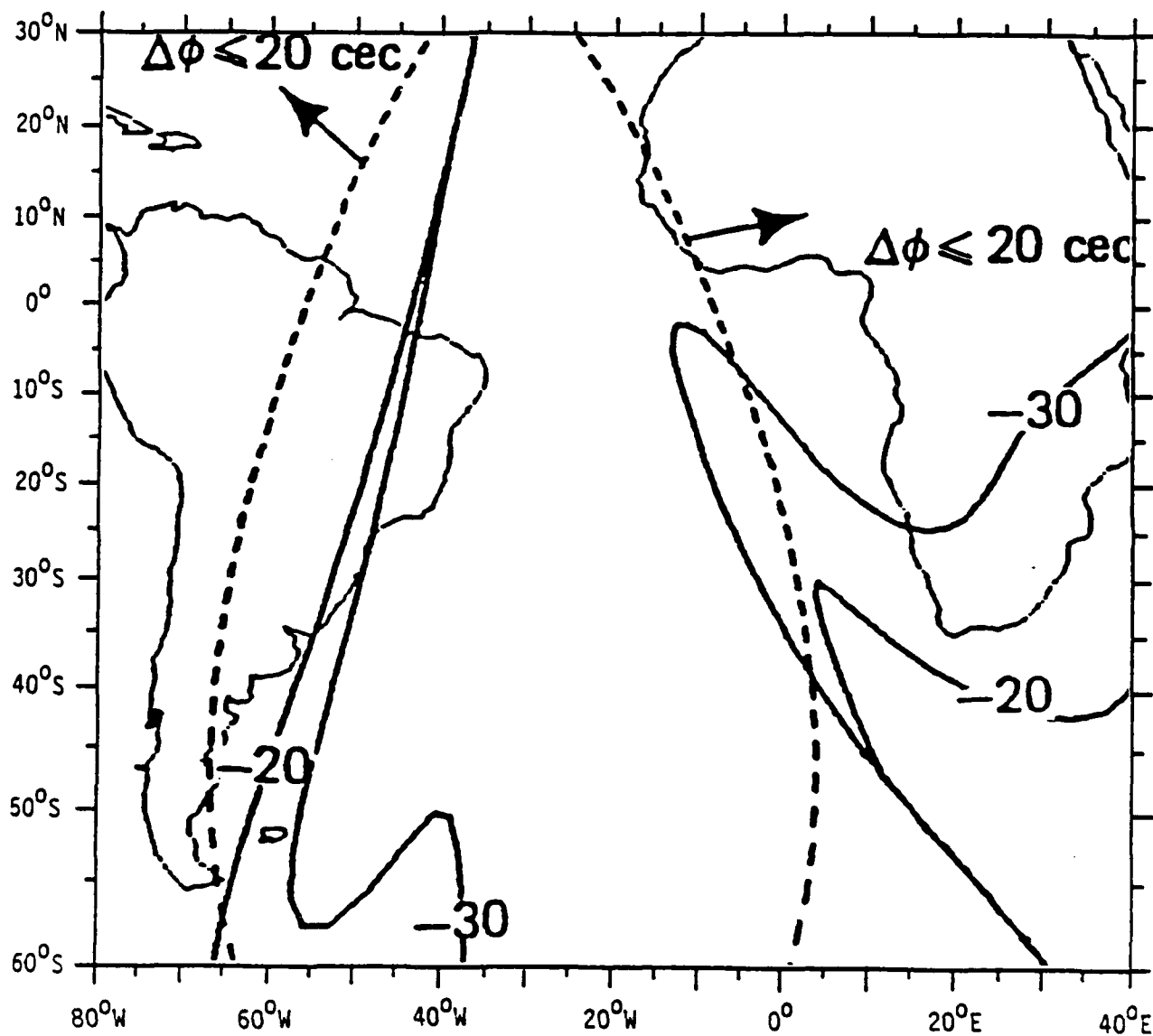
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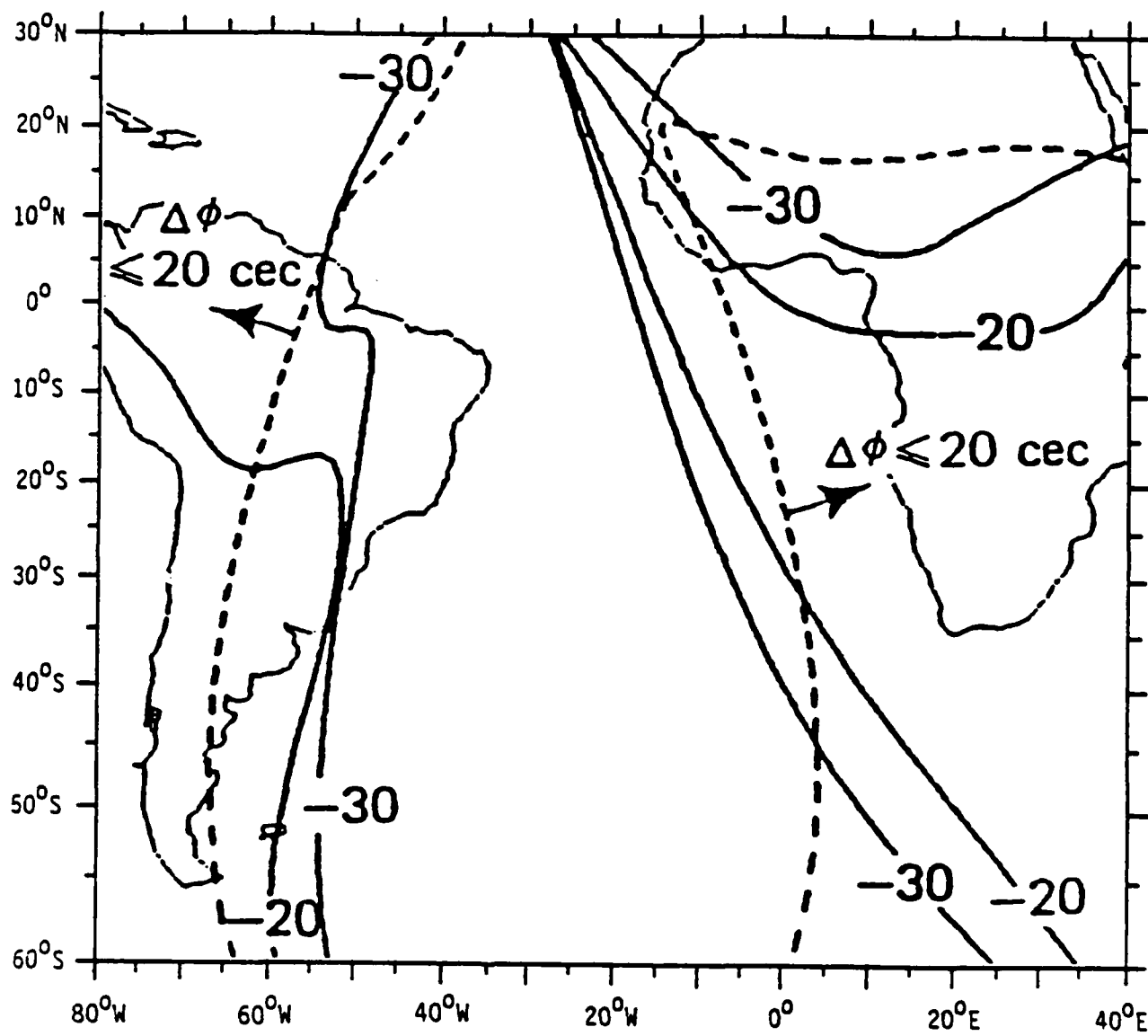
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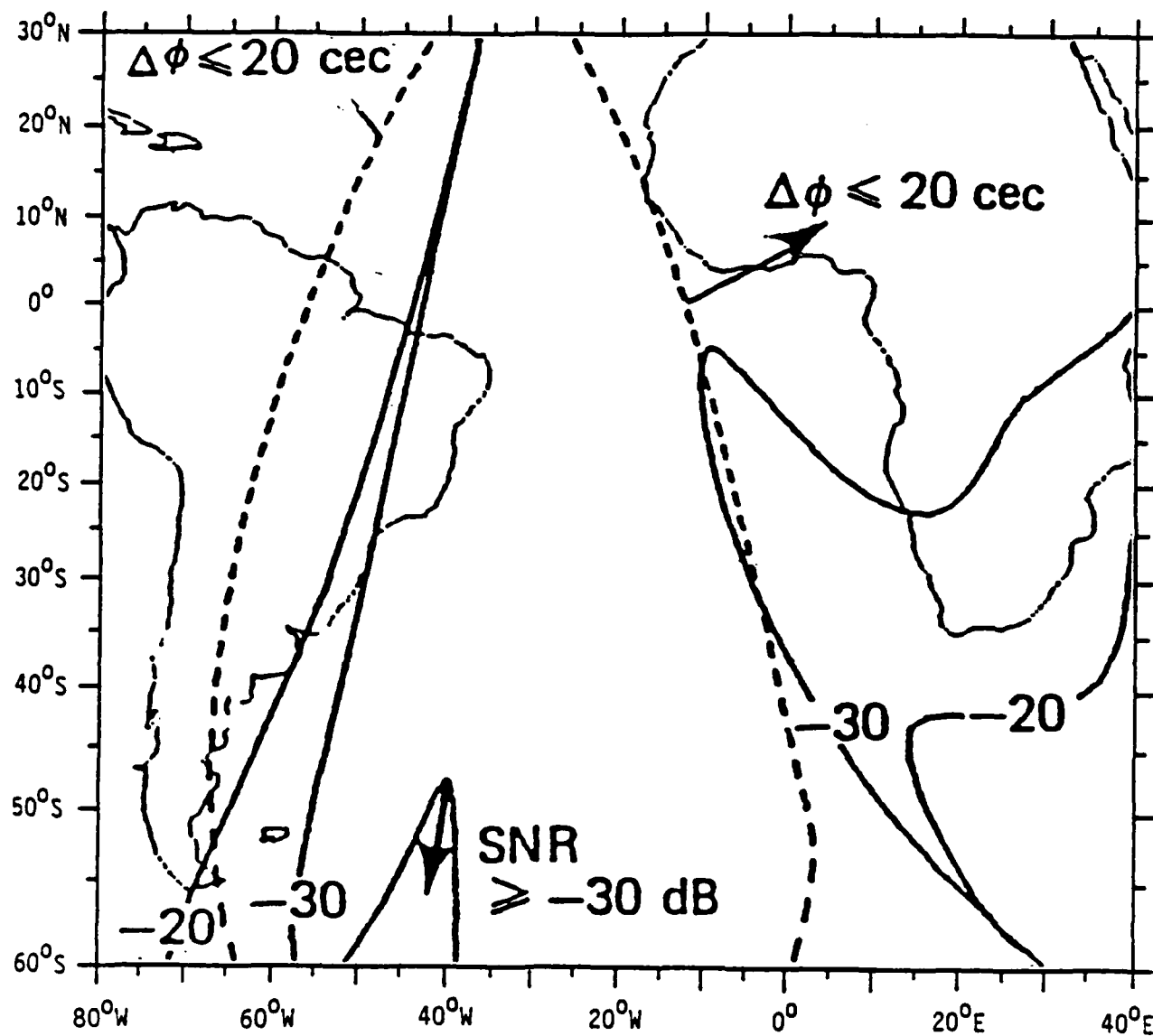
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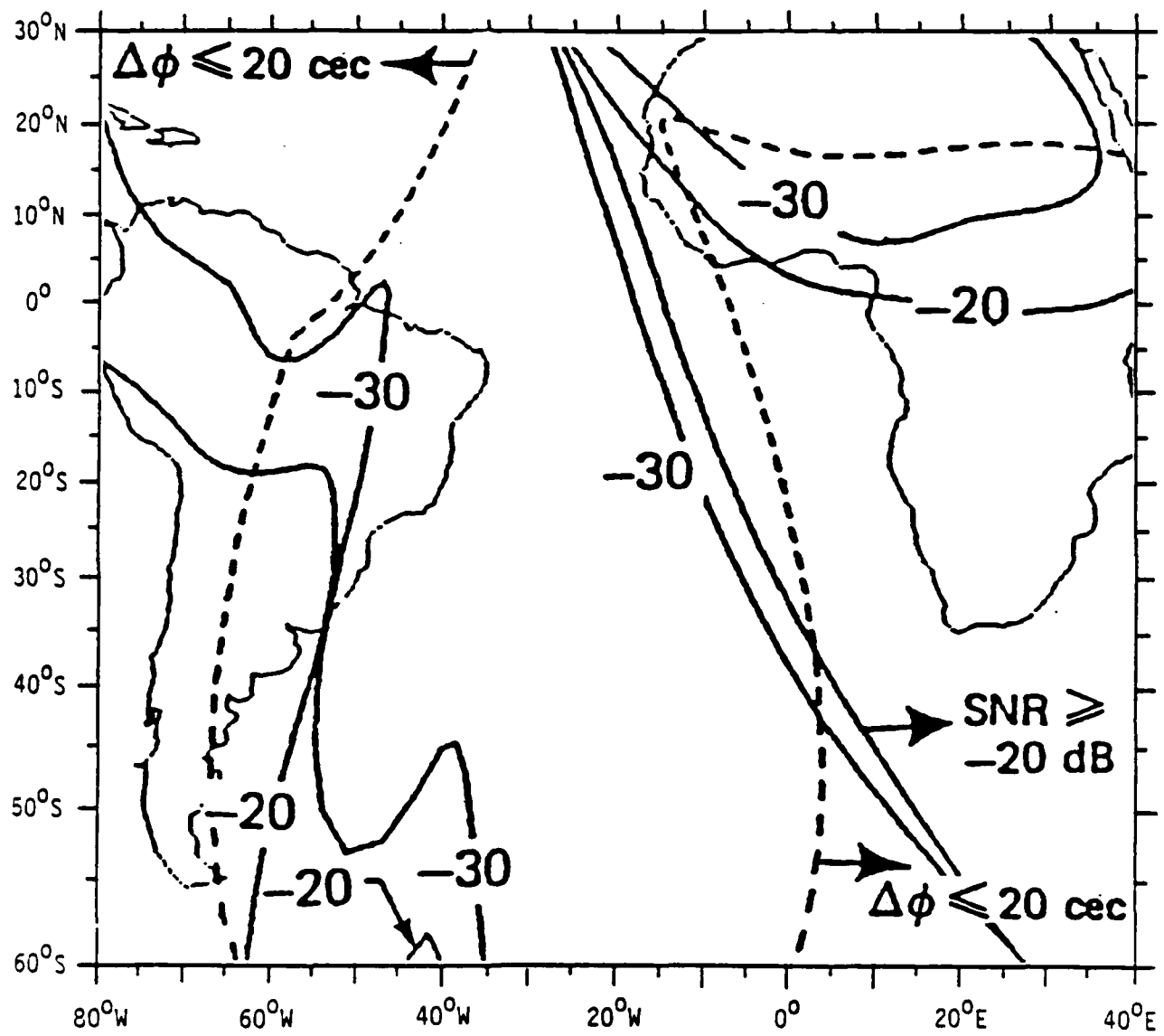
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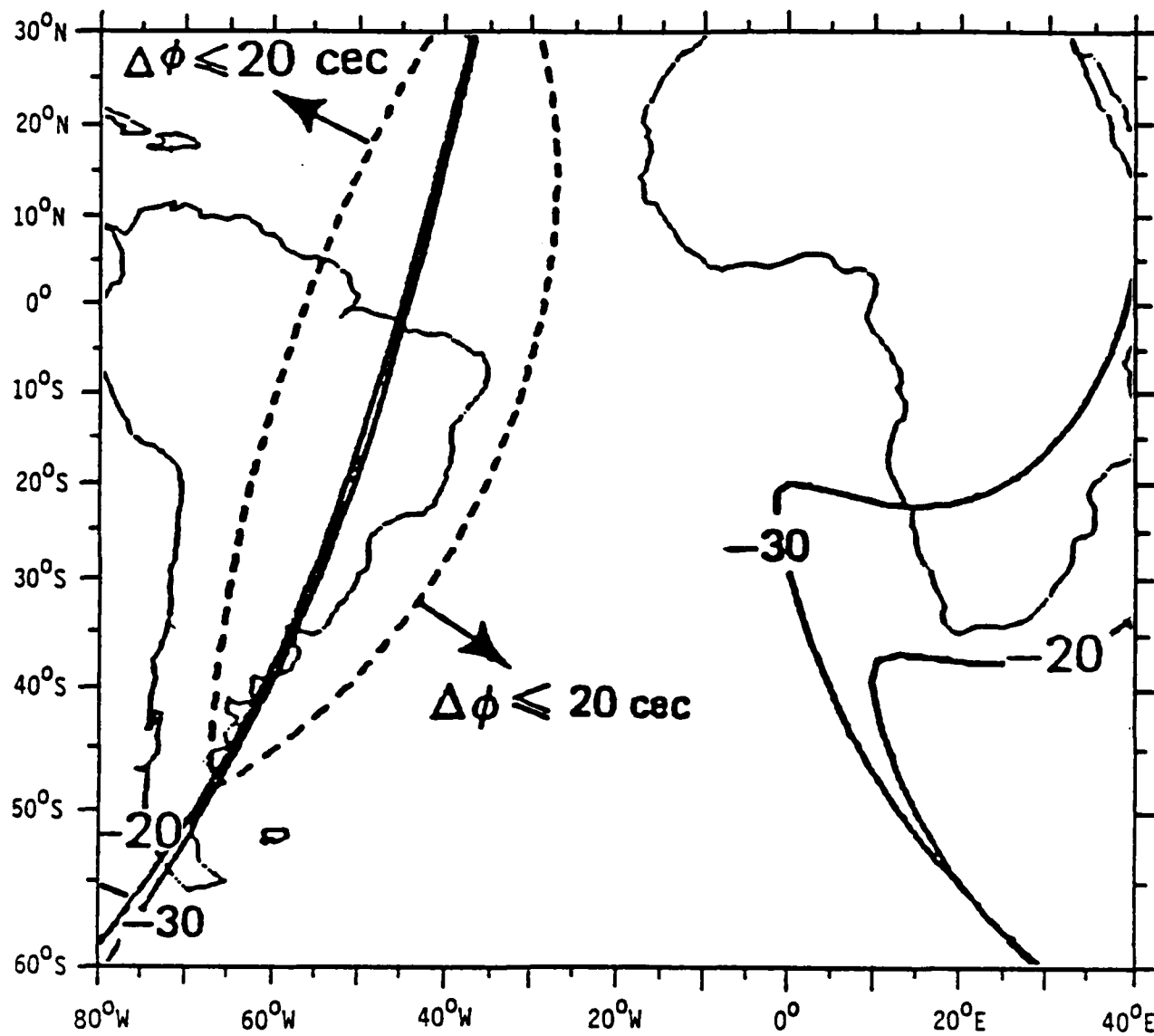
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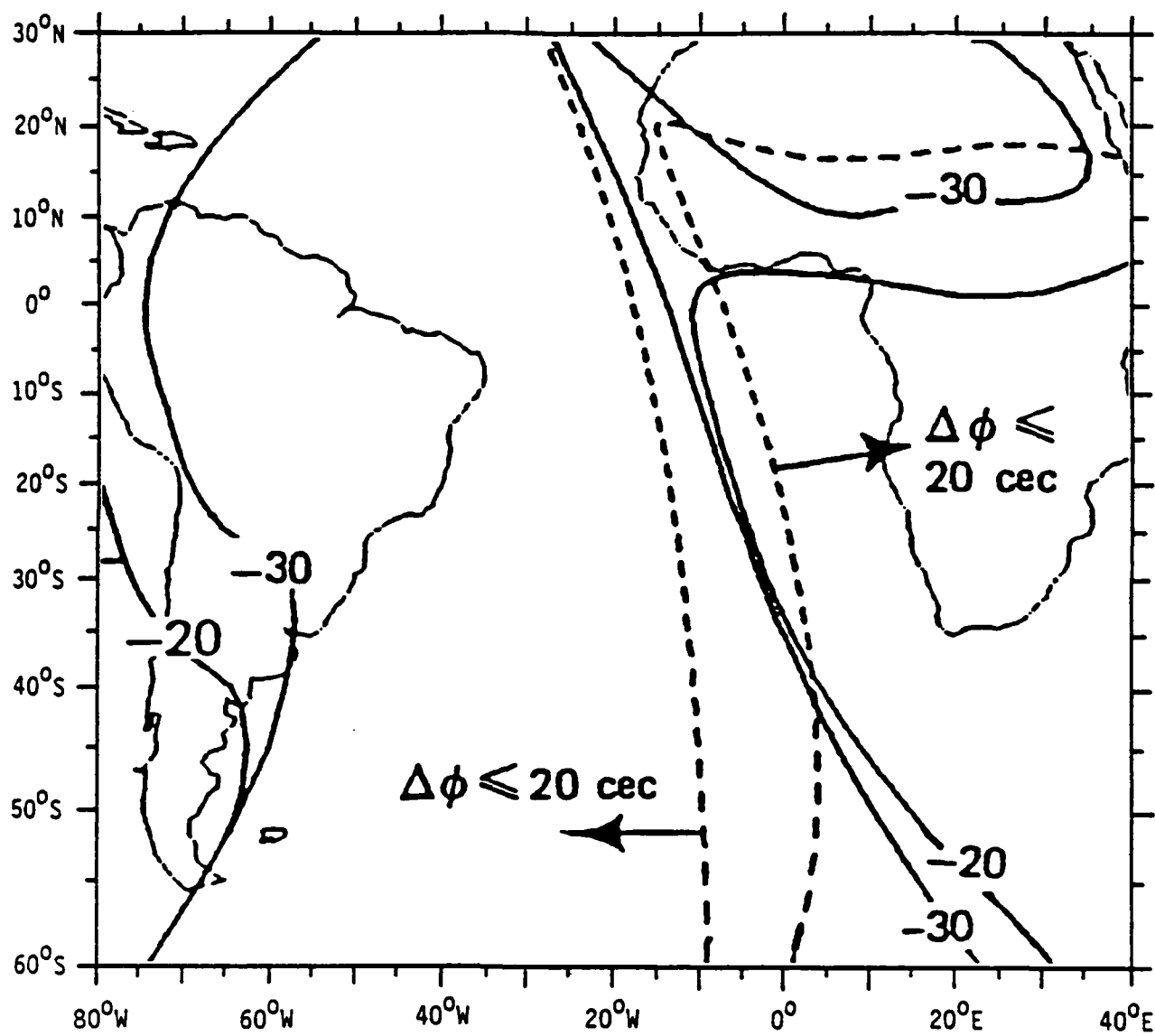
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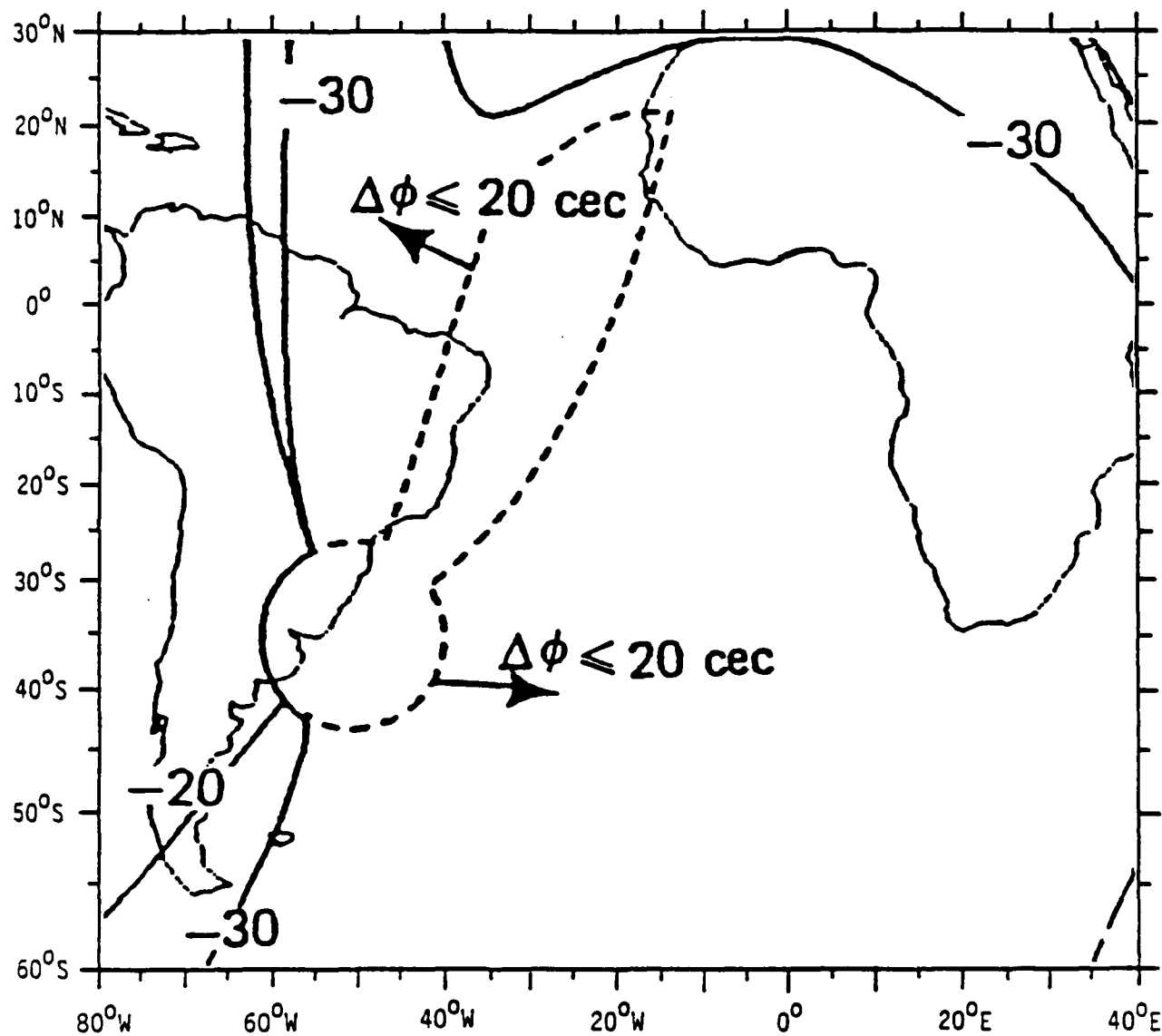
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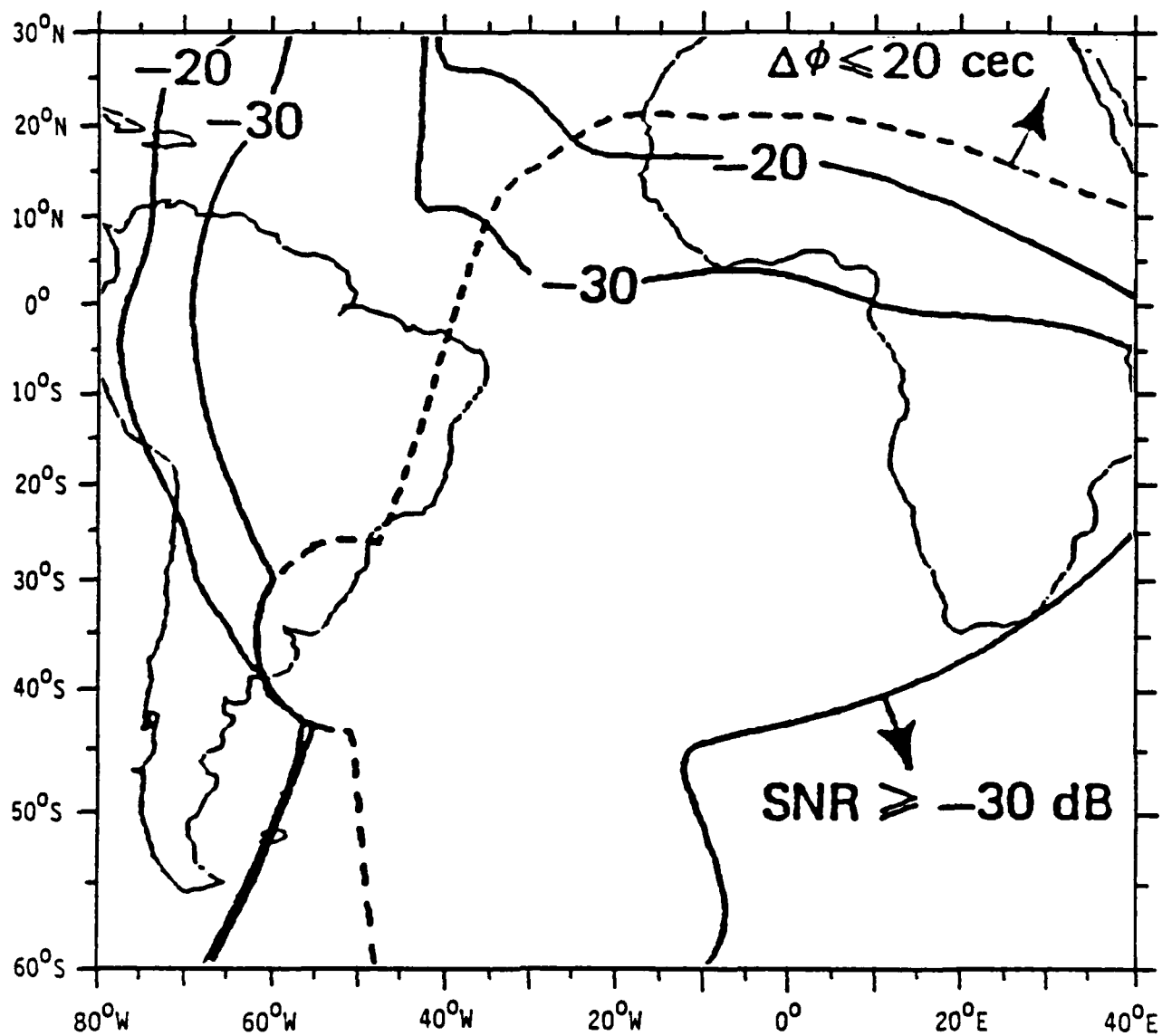
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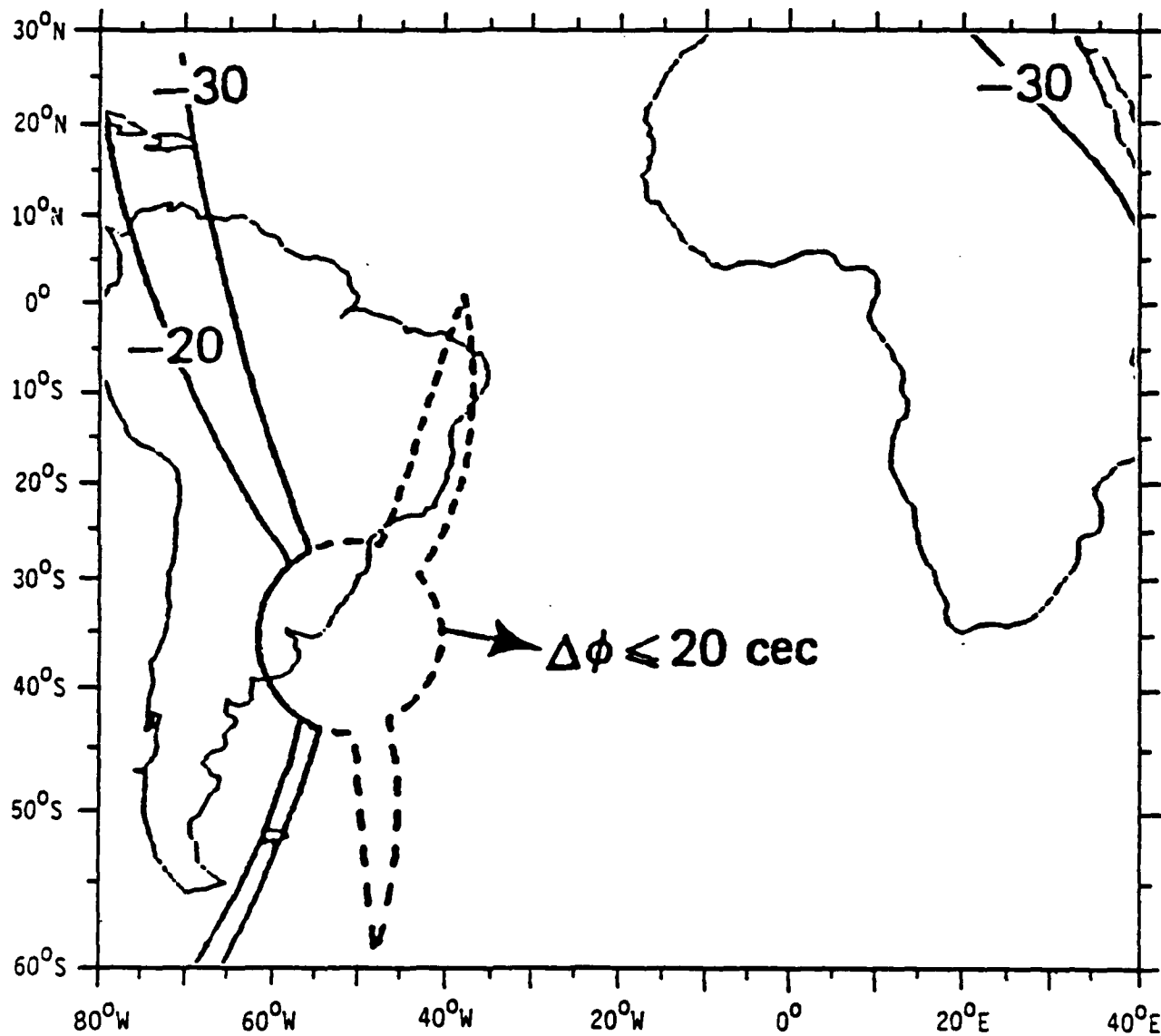
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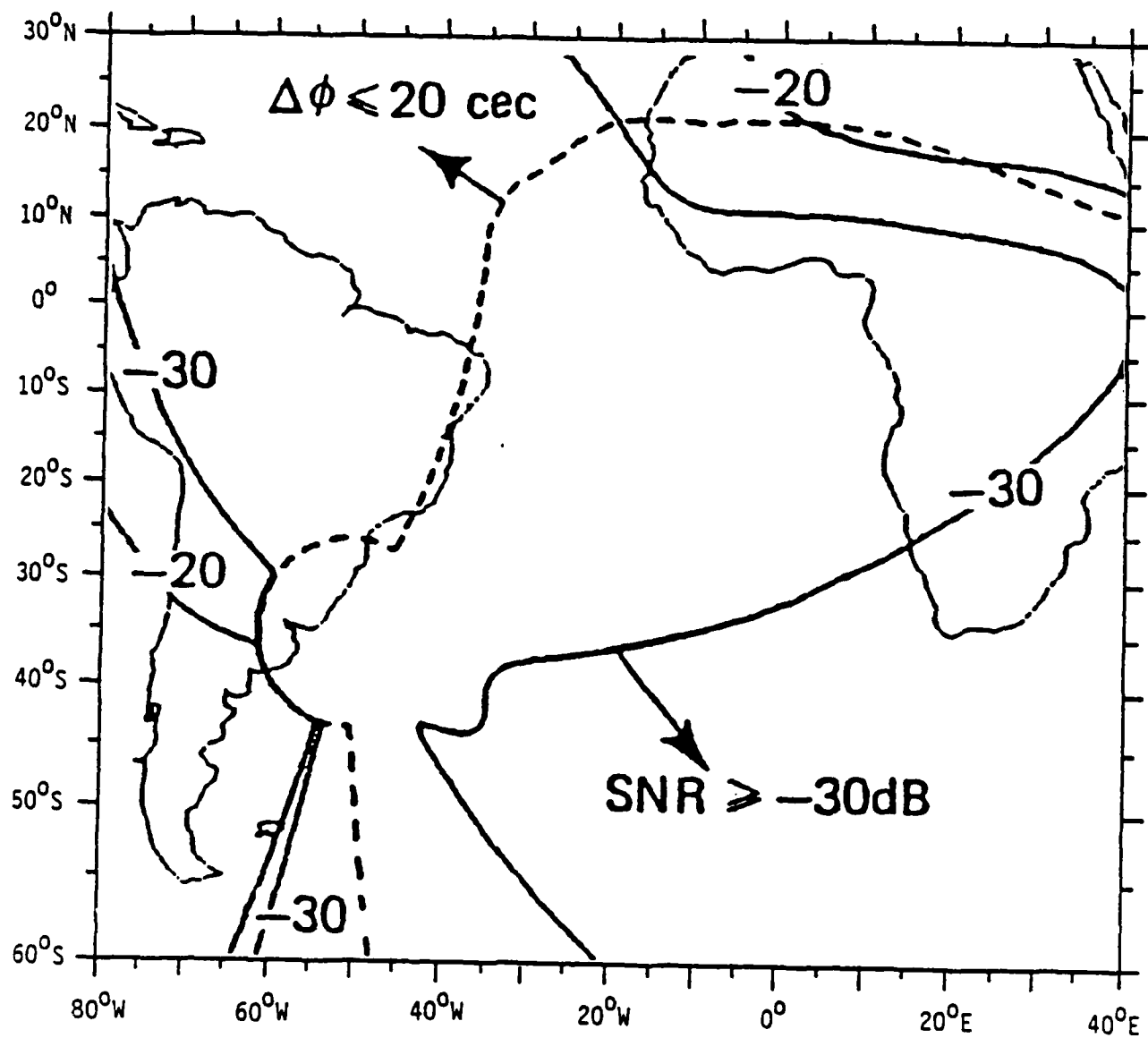
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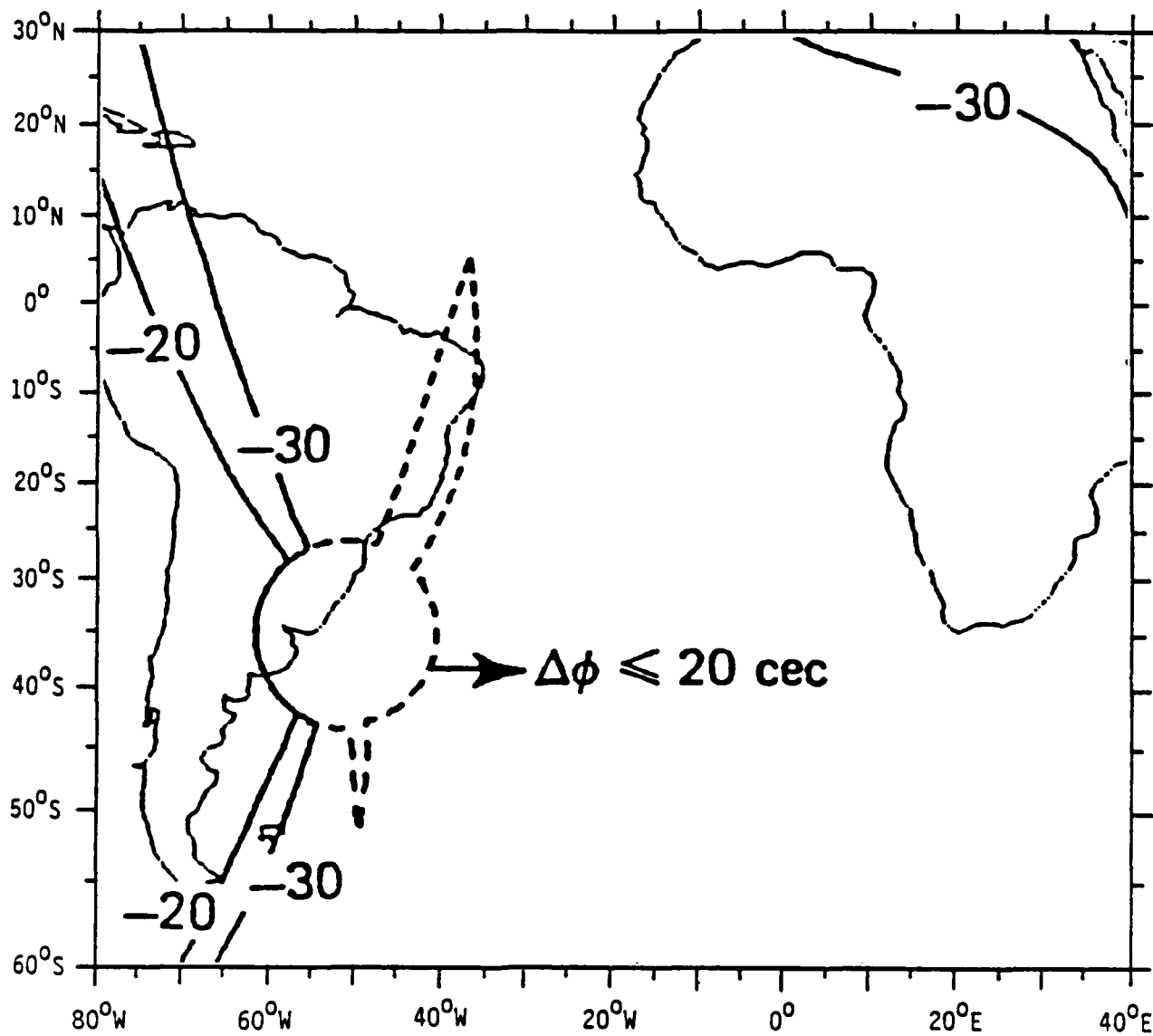
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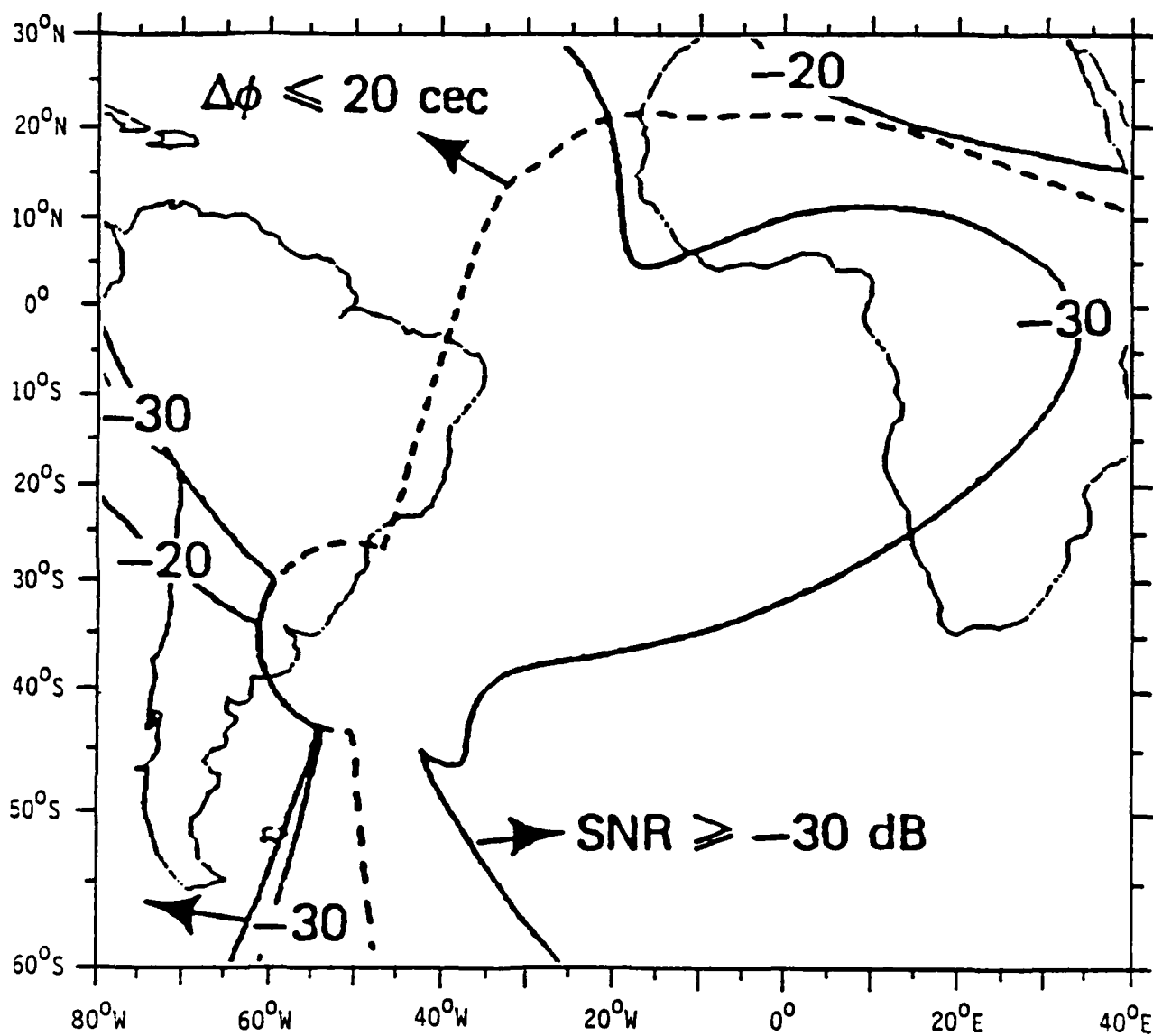
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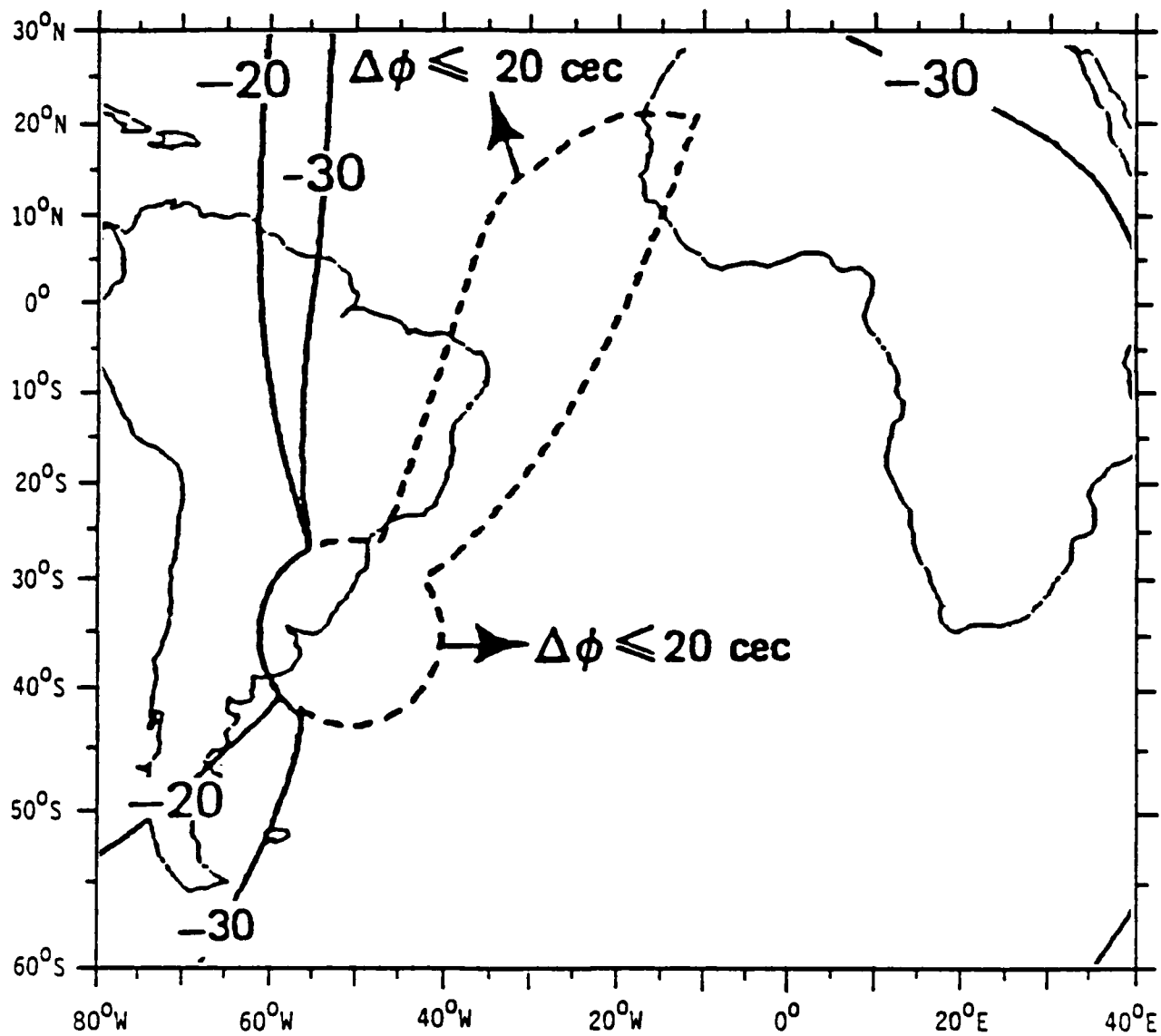
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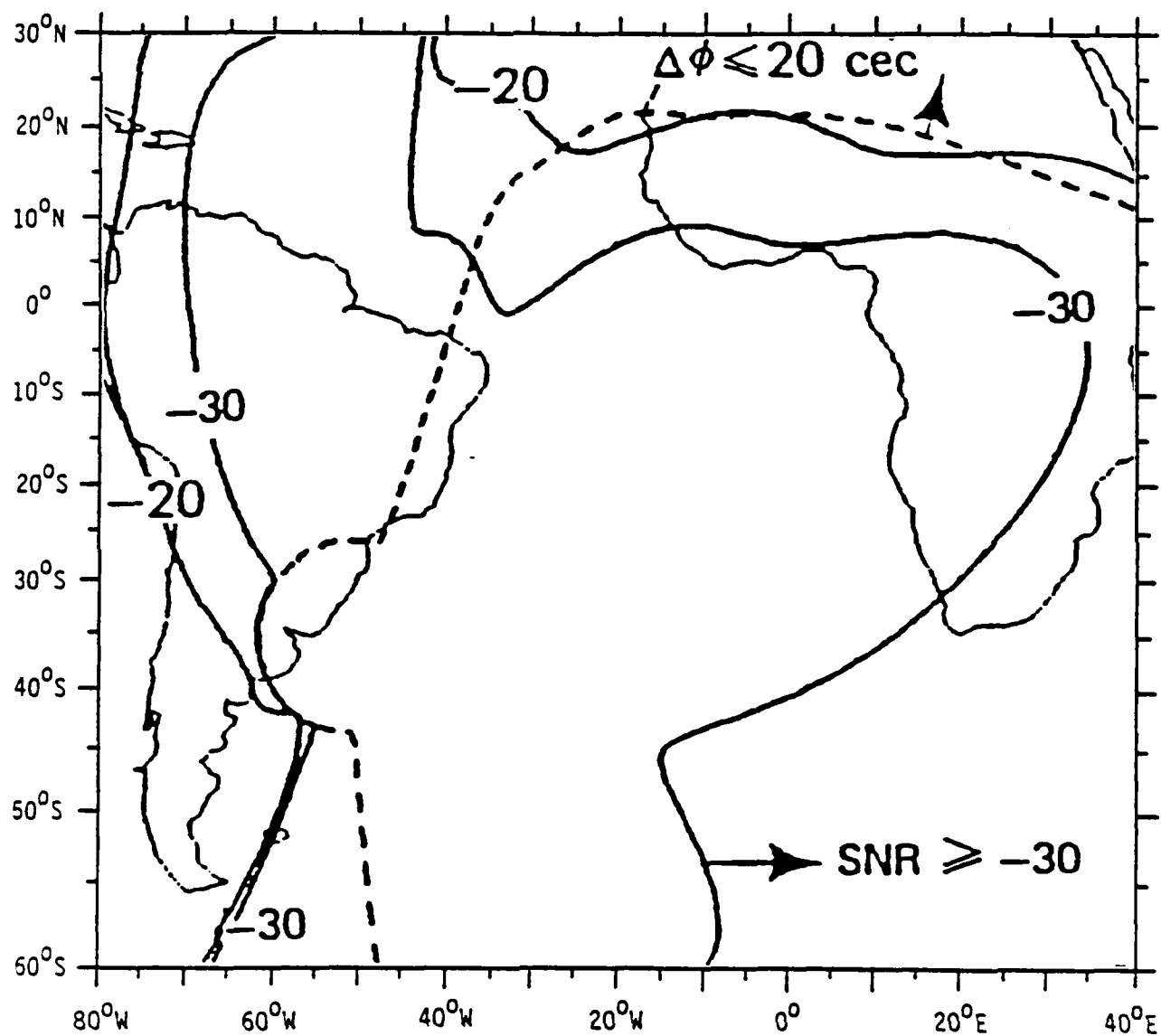
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APPENDIX G

OMEGA SIGNAL COVERAGE AT 10.2 KHZ IN SOUTH ATLANTIC REGION

APPENDIX G

OMEGA SIGNAL COVERAGE AT 10.2 KHz IN SOUTH ATLANTIC

64 individual OMEGA station 10.2 KHz signal coverage maps are presented for eight selected times: 0600 and 1800 GMT in February, May, August, and November.

Area coverage is 20° N to 60° S latitude
by 70° W to 20° E longitude

Map definitions:

- Each map is divided into a 8×9 matrix (72 zones), each zone measuring 10° latitude by 10° longitude.
- Within each zone, at designated coverage time, all SNR readings are presented from ships and/or fixed sites in the following form:

SHIP

SXX

YY \pm Z

where, S = Integrated OMEGA satellite recording

XX = Number of days with SNR readings within specified time period

YY = Mean SNR (dB) for days of coverage

Z = Standard deviation of SNR (dB) for days of coverage

e.g. S5 represents 5 days of IOS SNR

-9 \pm 3 recordings with mean SNR value of -9 dB and standard deviation of 3 dB

S1 represents one day of IOS SNR

-10 recording with mean SNR value of -10 decibels.

FIXED SITE

FAA

BB \pm C

where, F = fixed site OMEGA recording

AA = number of days with SNR readings at designated time

BB = mean SNR (dB) for days of coverage

C = standard deviation of SNR (dB)

e.g. F10 represents 10 days of fixed site

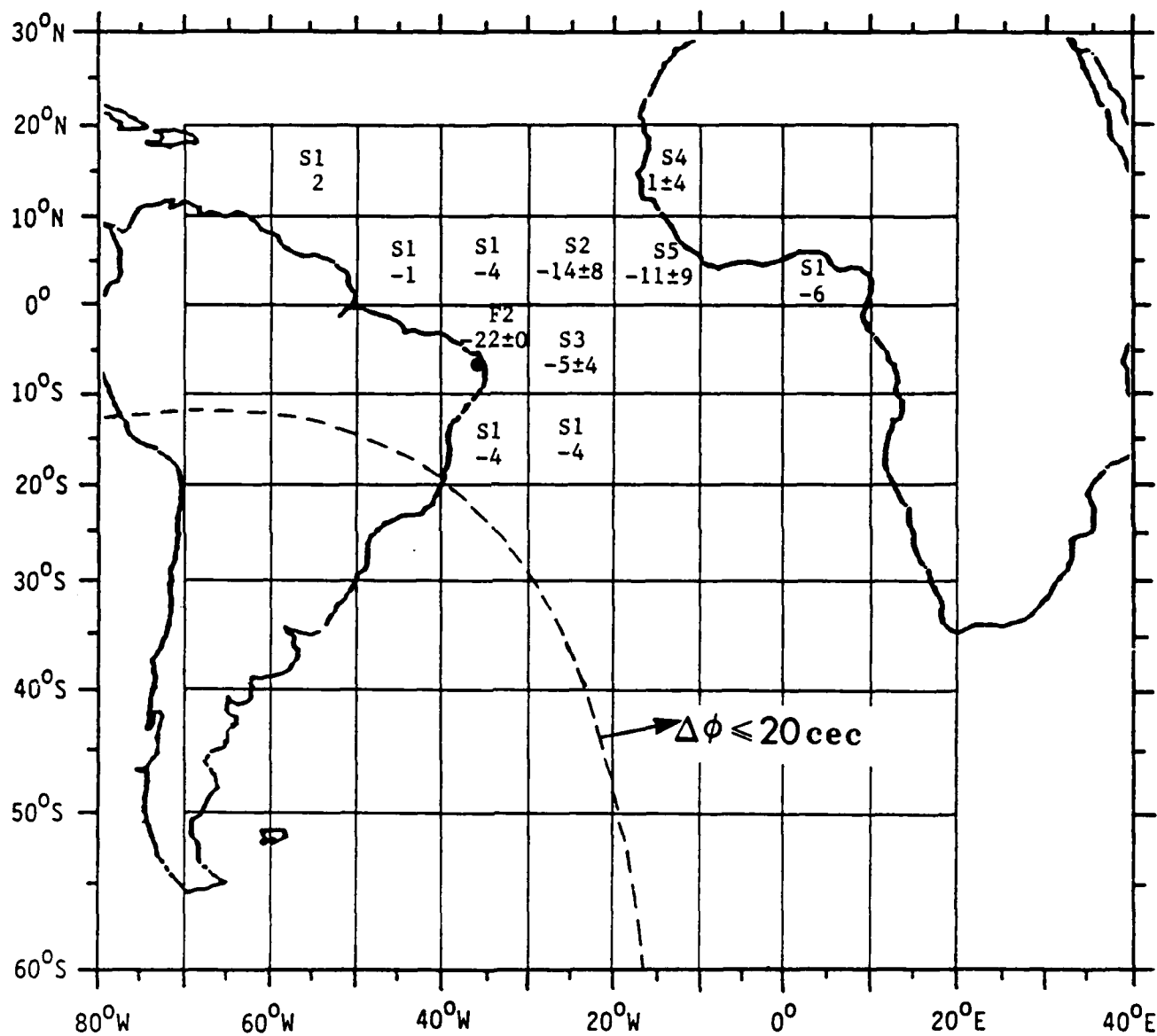
4±6 SNR recording with a mean SNR value of 4 dB and standard deviation of 6 dB.

- 20 cec $\Delta\phi$ threshold contour is shown as a dashed line, where $\Delta\phi$ is the modal interference induced phase deviation in the signal.

NORWAY (A)

FEBRUARY

06:00 GMT

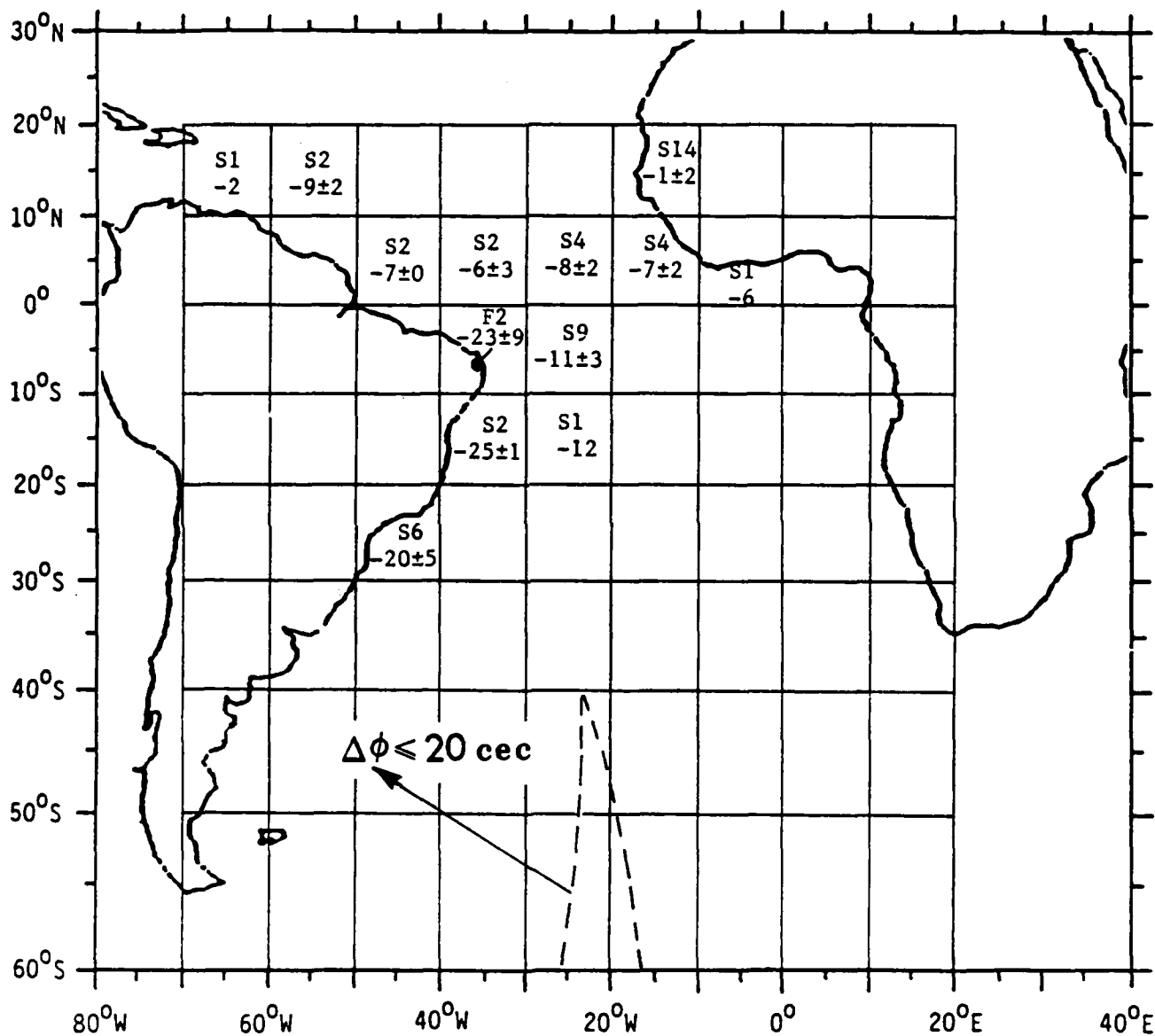


NIGHT PATH

NORWAY (A)

FEBRUARY

18:00 GMT

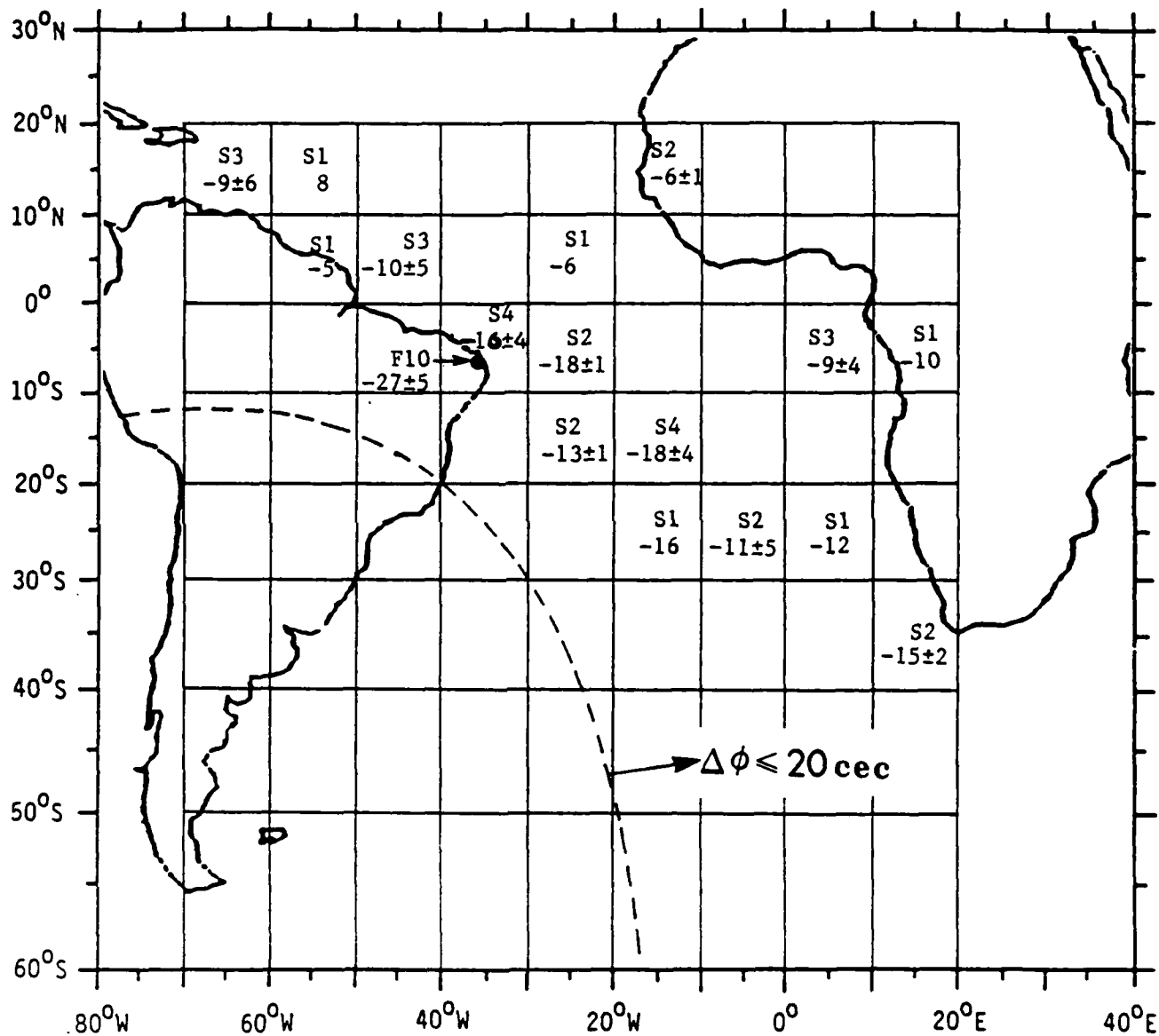


NIGHT PATH

NORWAY (A)

MAY

06:00 GMT

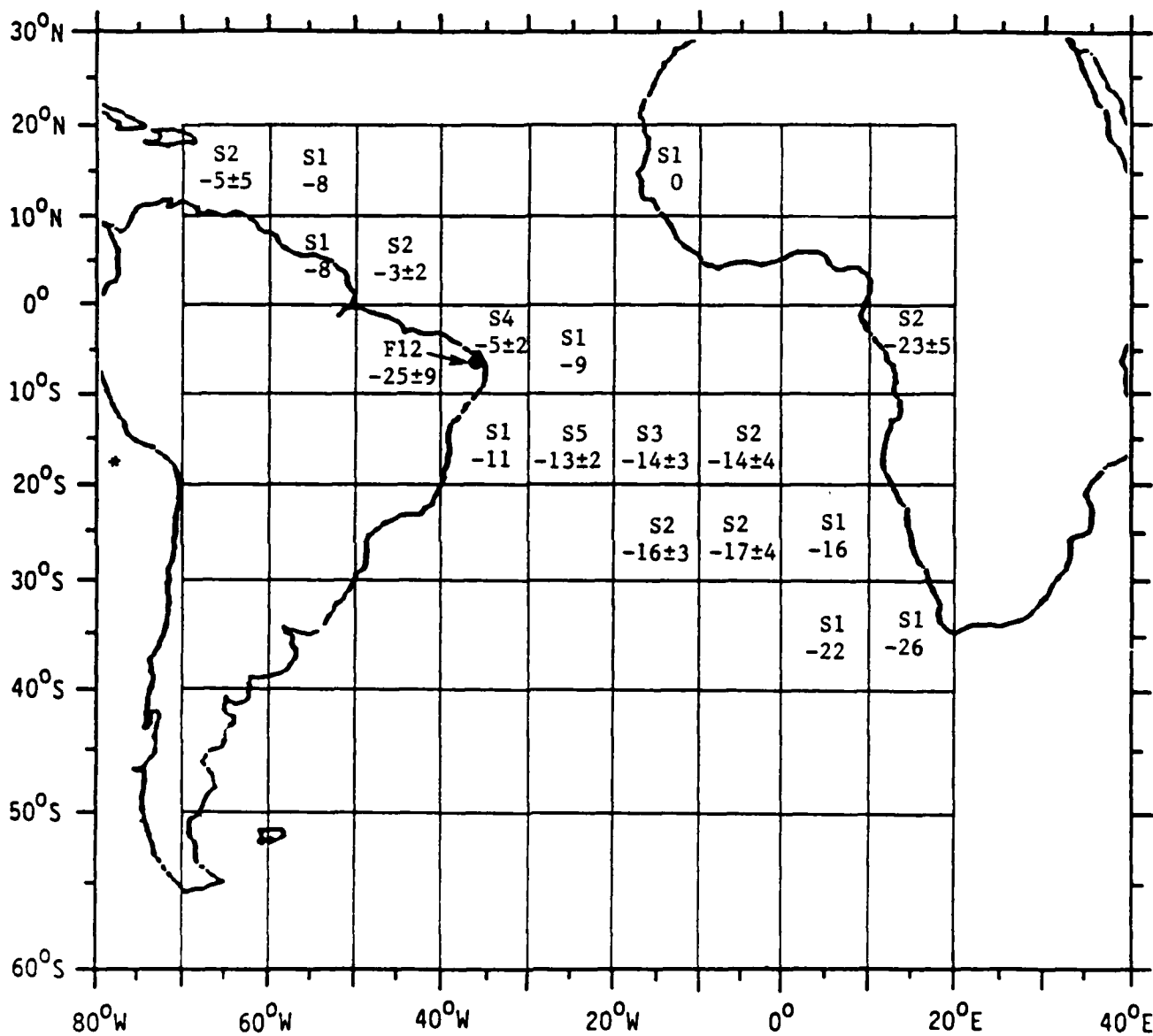


DAY PATH

NORWAY (A)

MAY

18:00 GMT



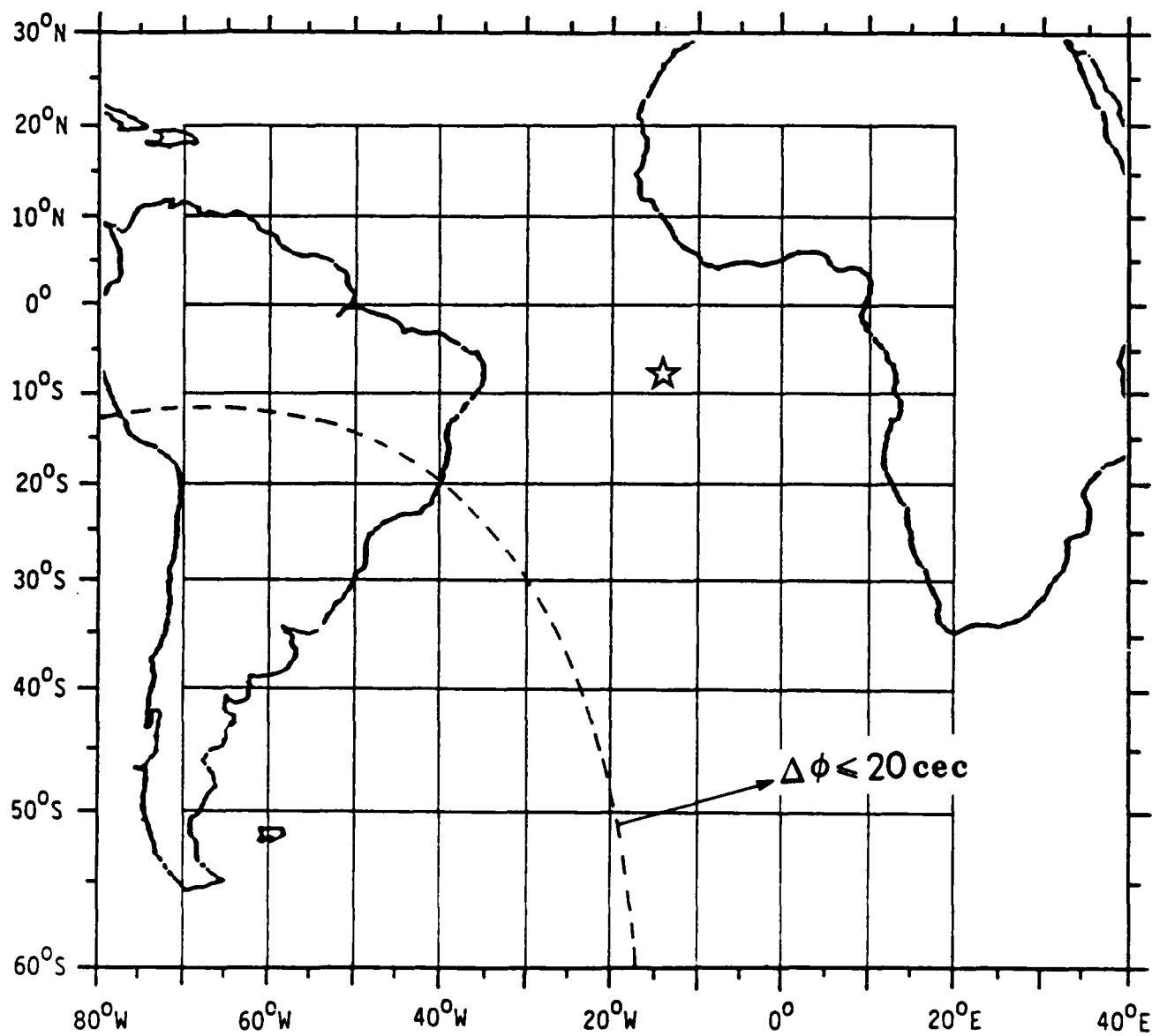
DAY PATH

NORWAY

(A)

AUGUST

06:00 GMT



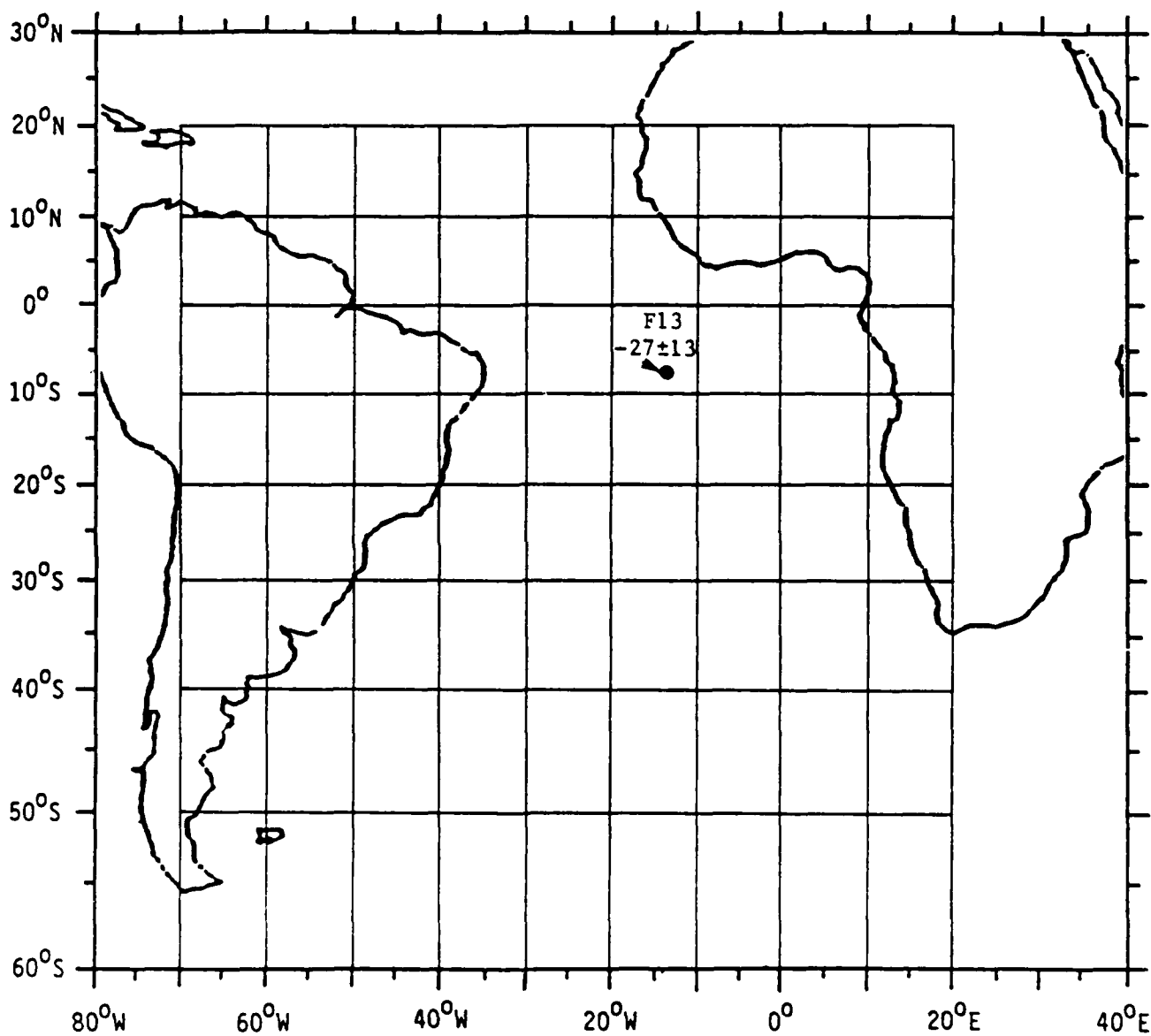
☆ ASCENSION ISLAND
MEAN SNR \leq -30 dB

DAY PATH

NORWAY (A)

AUGUST

18:00 GMT

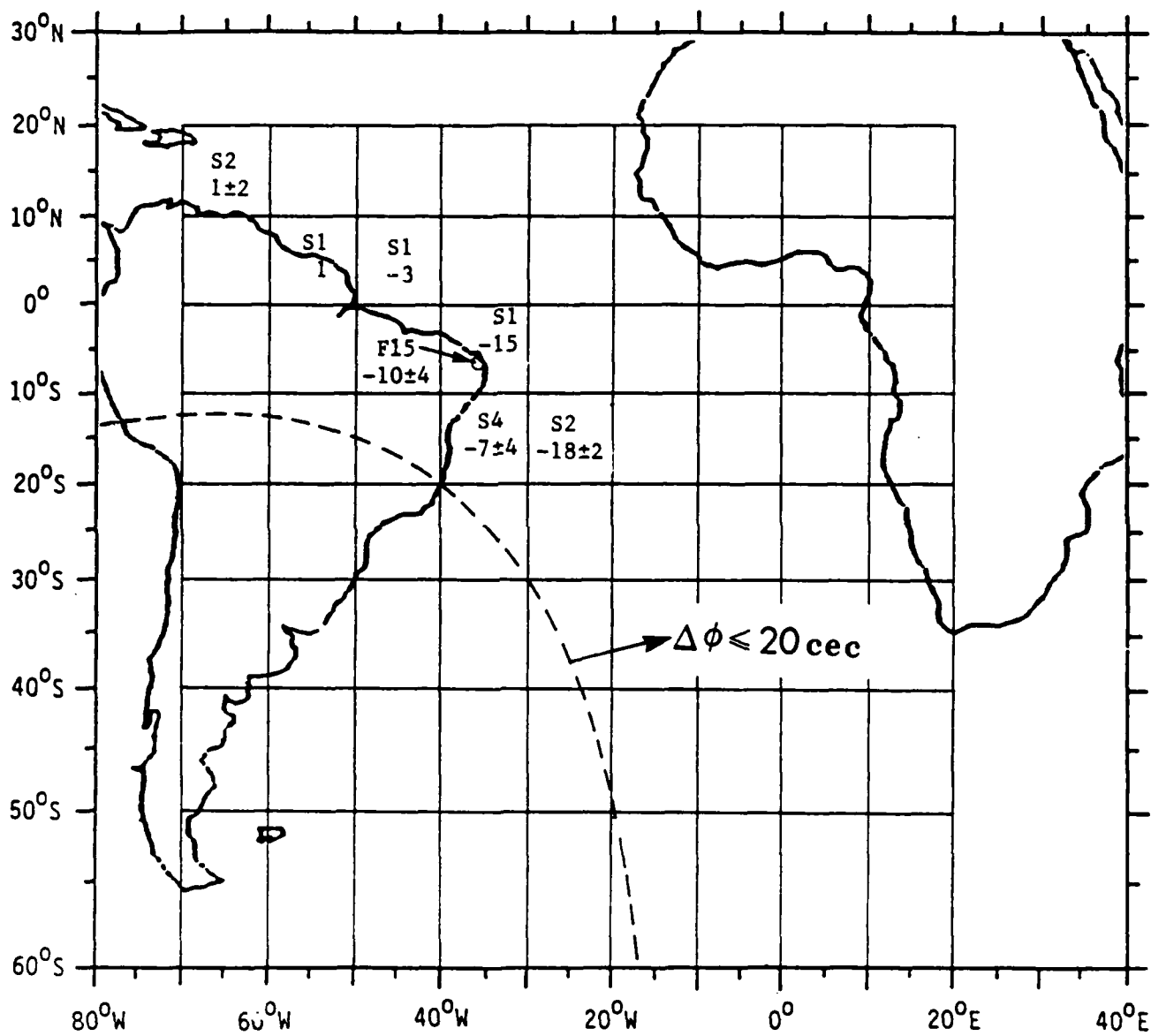


DAY PATH

NORWAY (A)

NOVEMBER

06:00 GMT

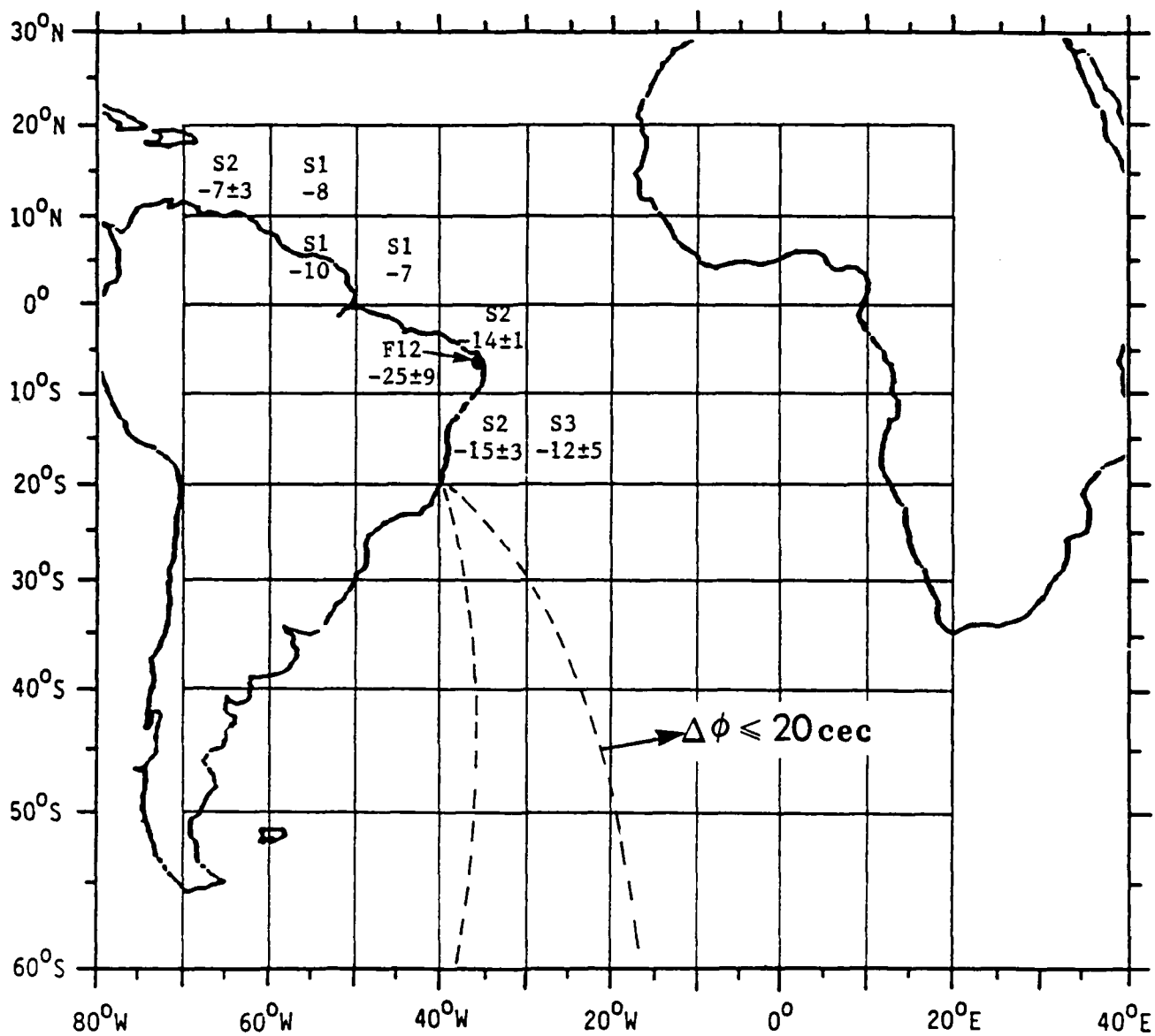


NIGHT PATH

NORWAY (A)

NOVEMBER

18:00 GMT

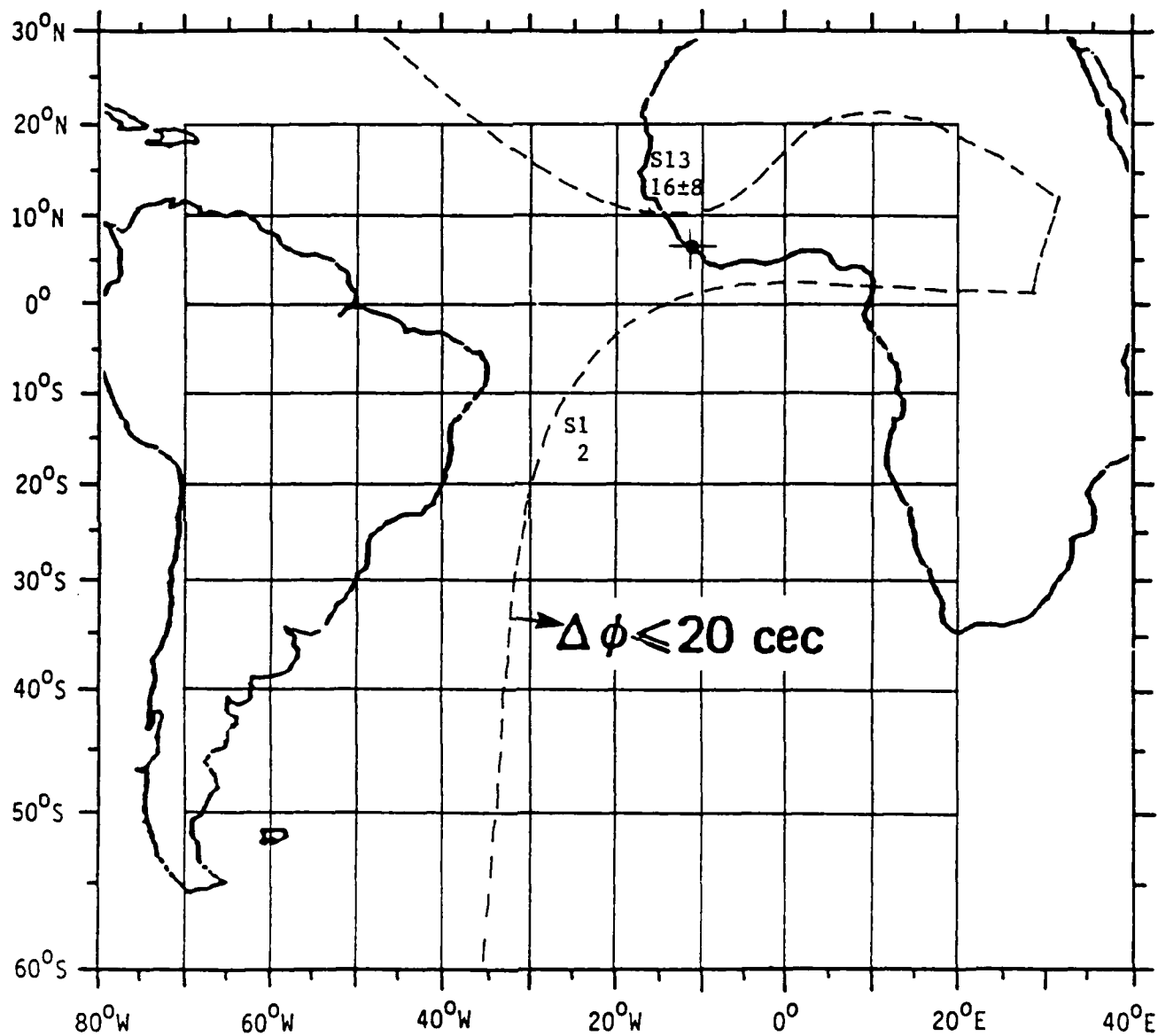


NIGHT PATH

LIBERIA (B)

FEBRUARY

06:00 GMT

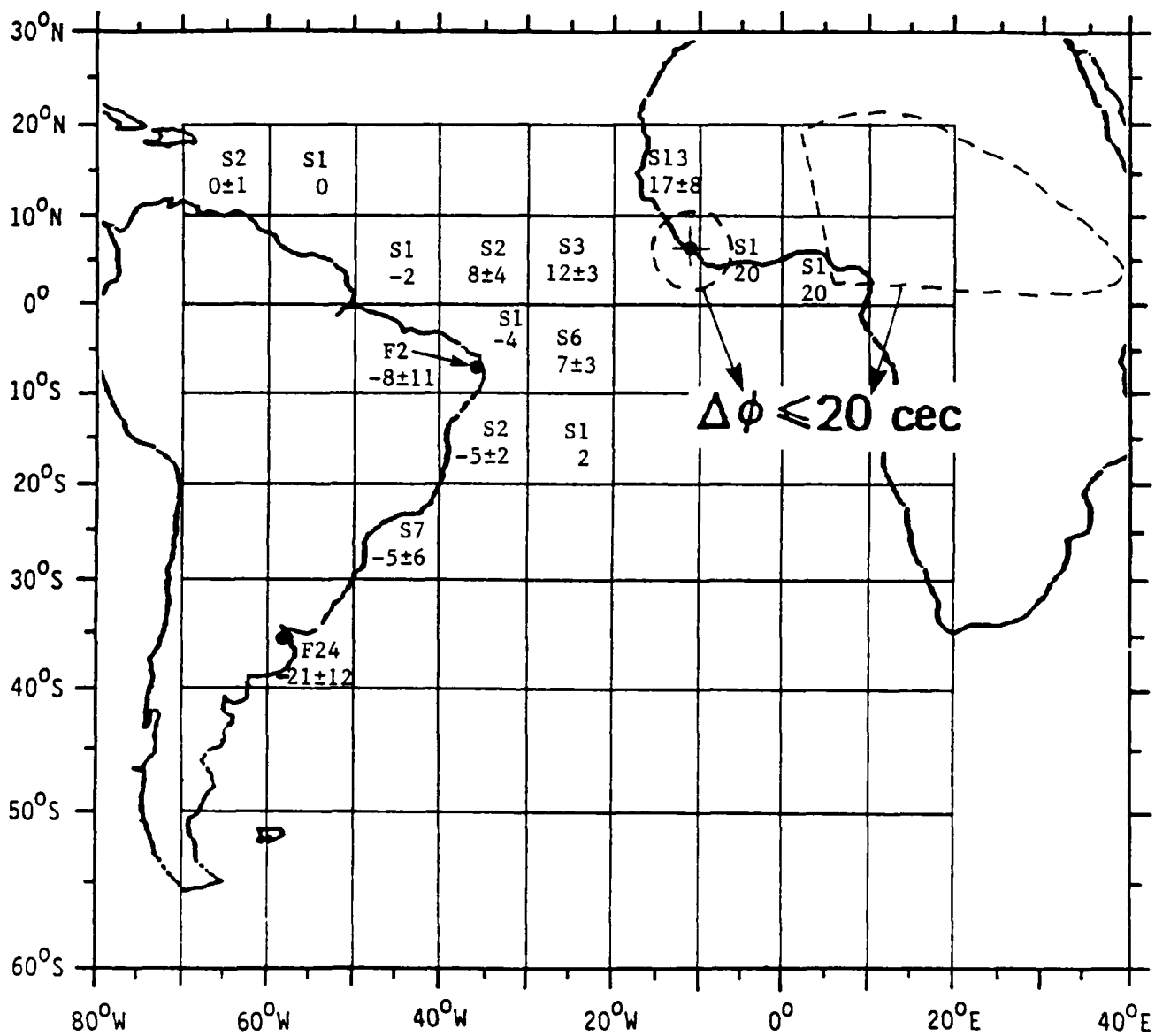


NIGHT PATH

LIBERIA (B)

FEBRUARY

18:00 GMT

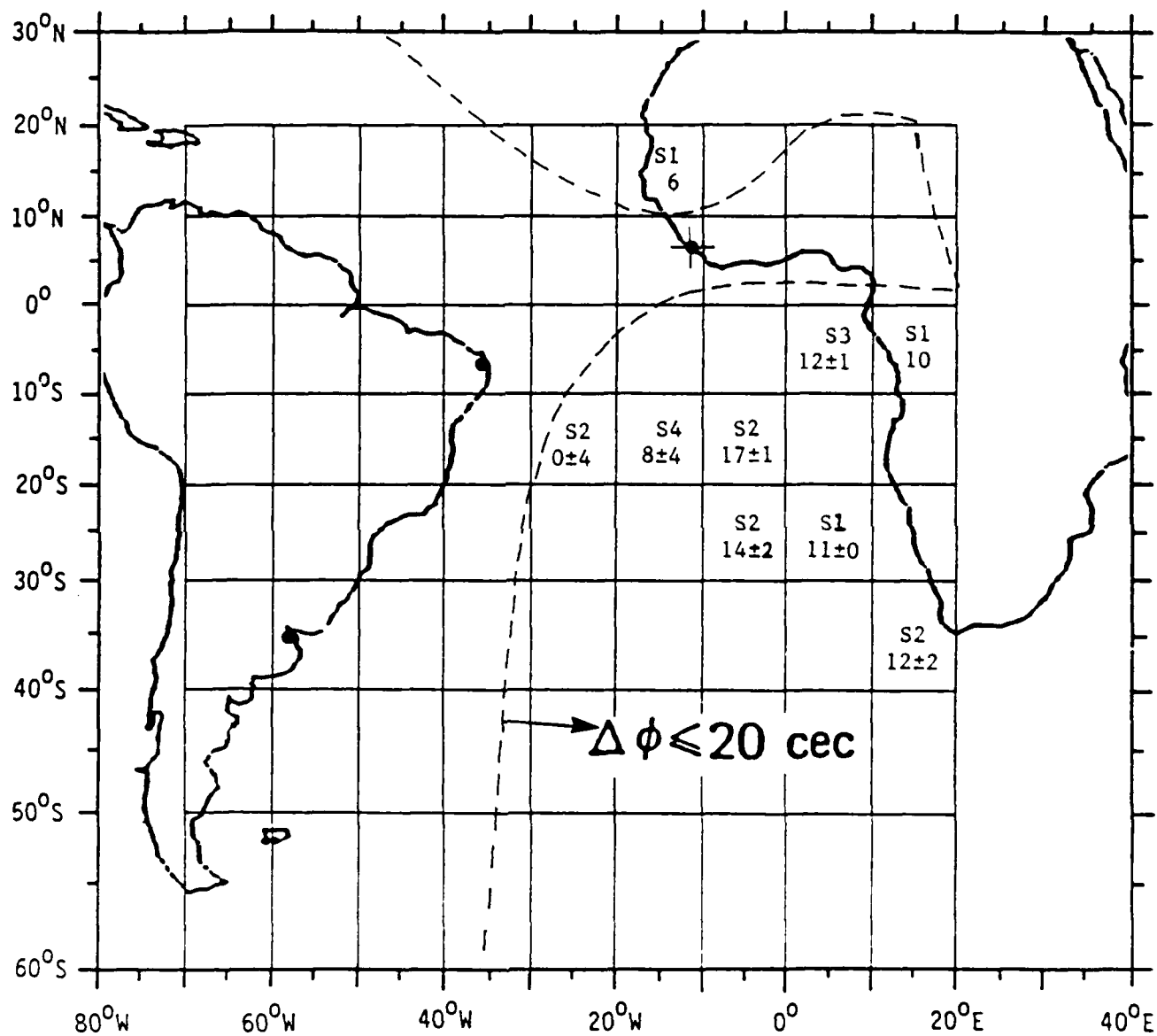


DAY PATH

LIBERIA (B)

MAY *

06:00 GMT*

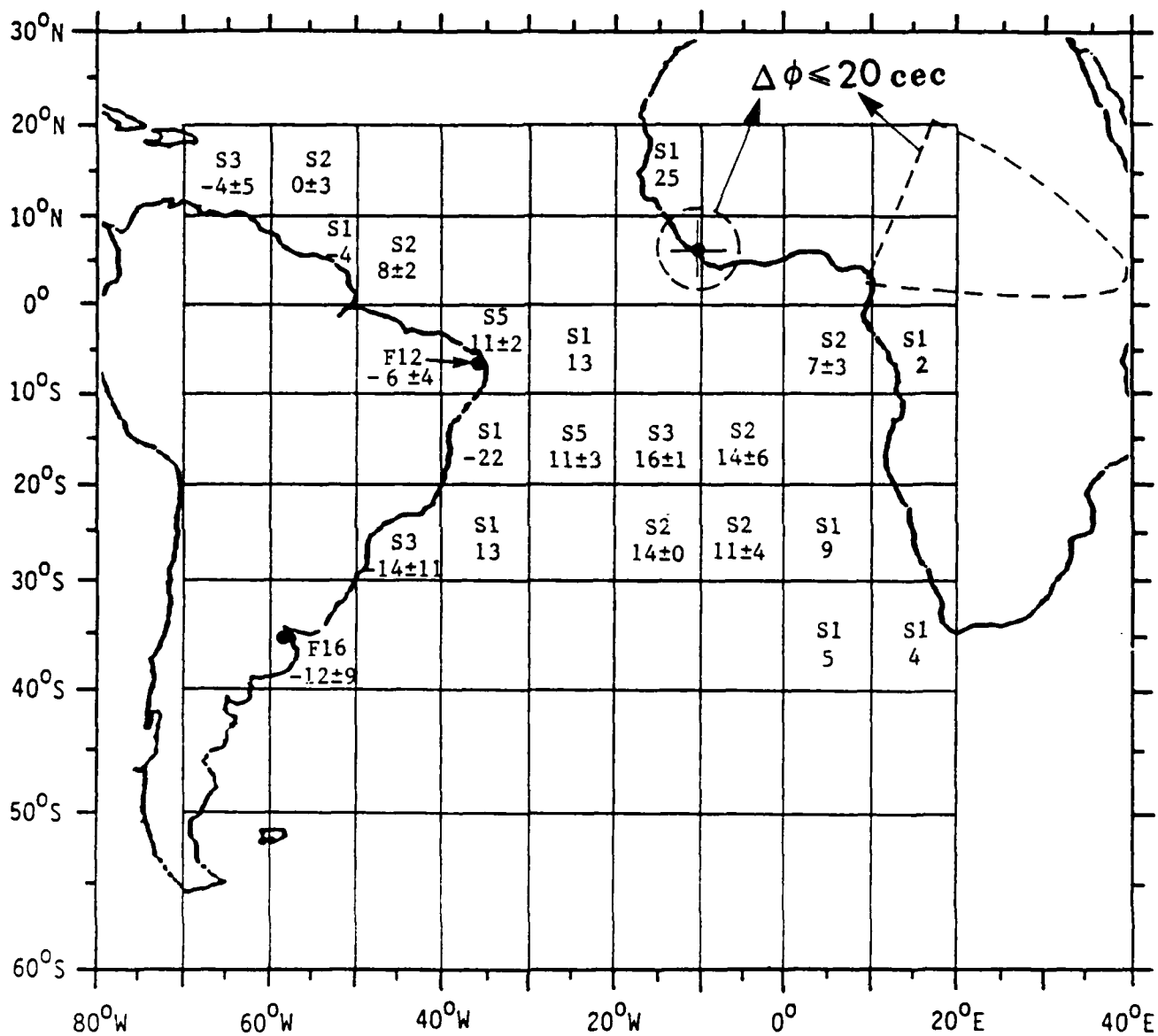


NIGHT PATH*

LIBERIA (B)

MAY

18:00 GMT

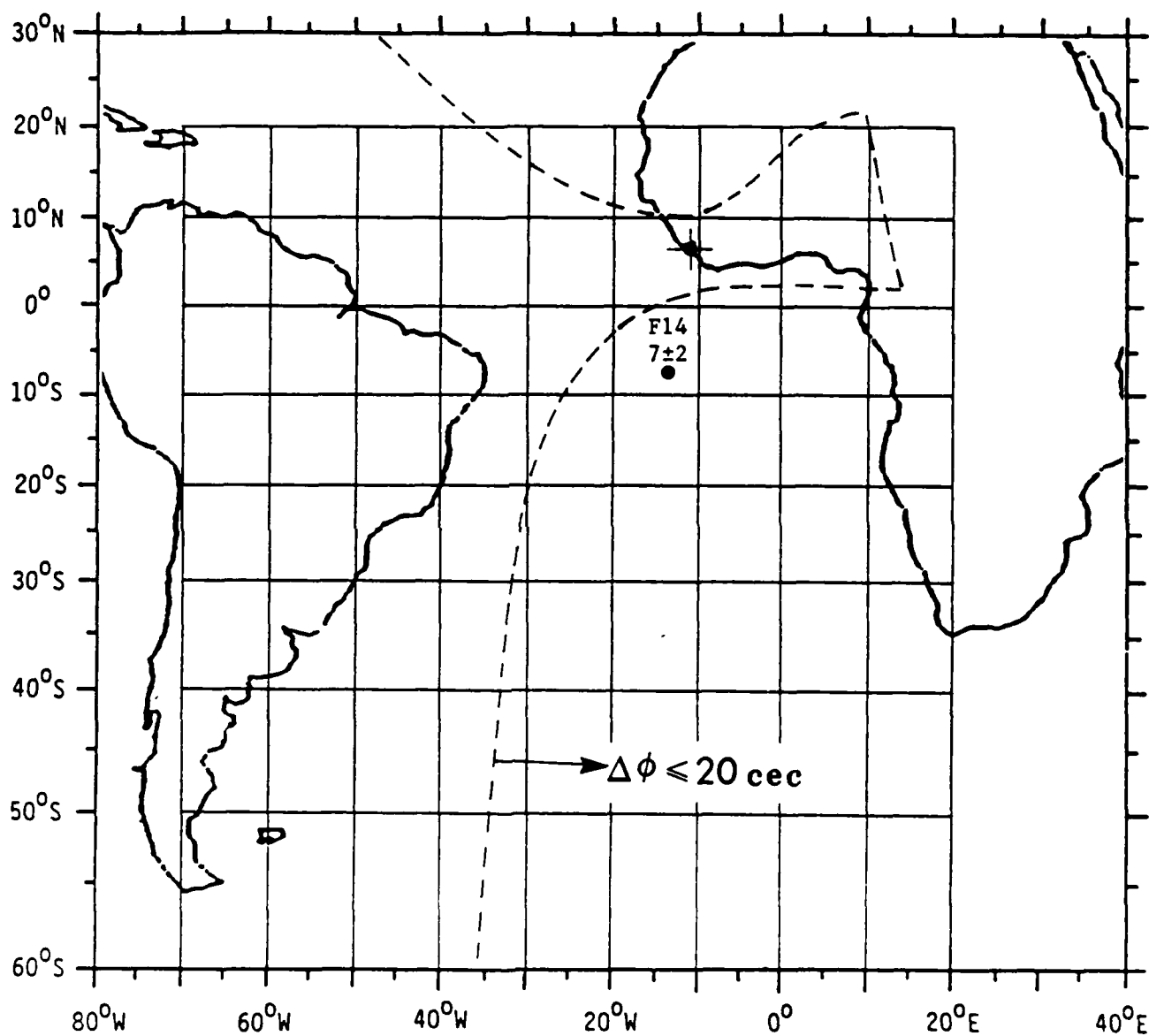


DAY PATH

LIBERIA (B)

AUGUST

06:00 GMT

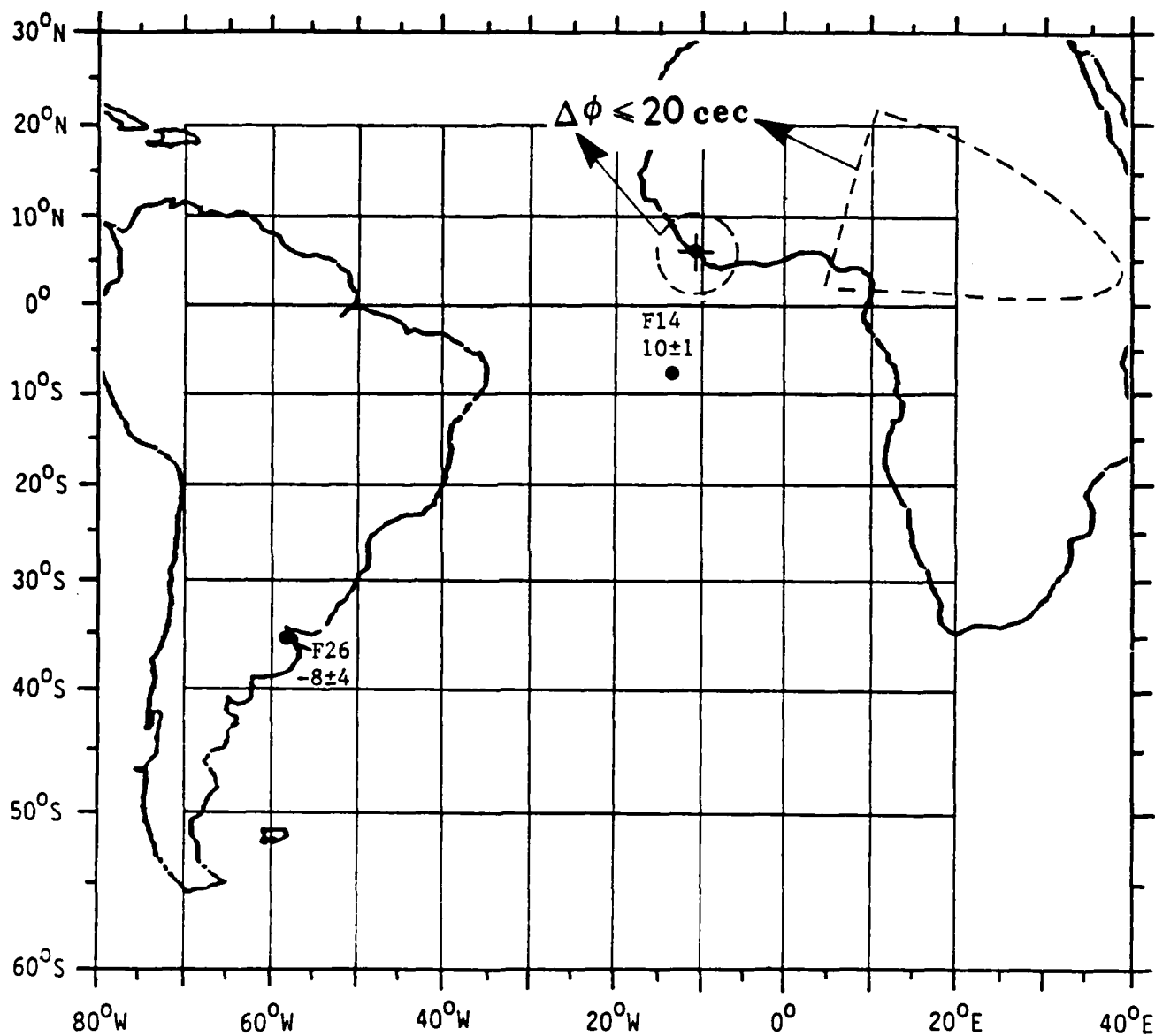


NIGHT PATH

LIBERIA (B)

AUGUST

18:00 GMT

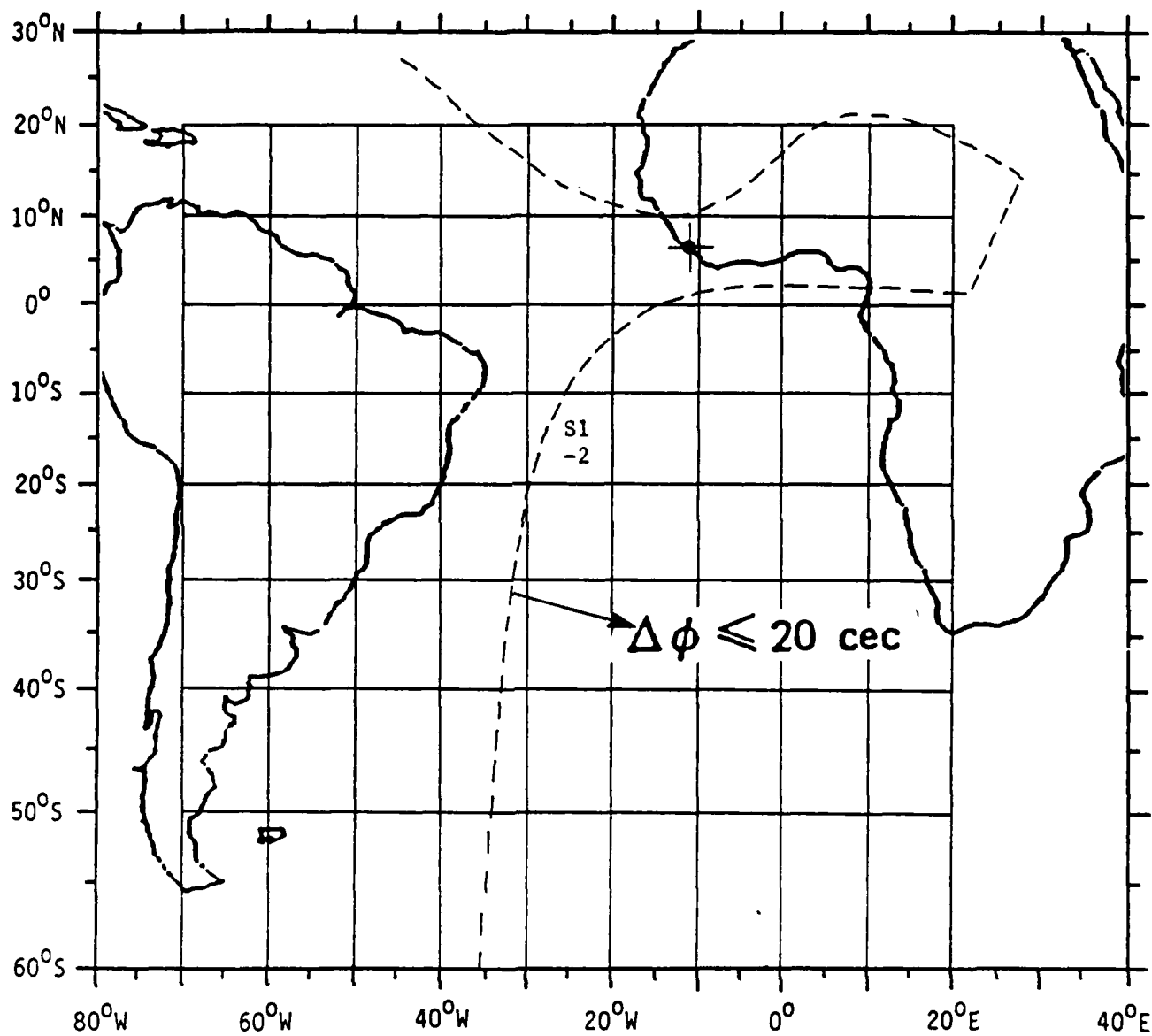


DAY PATH

LIBERIA (B)

NOVEMBER

06:00 GMT

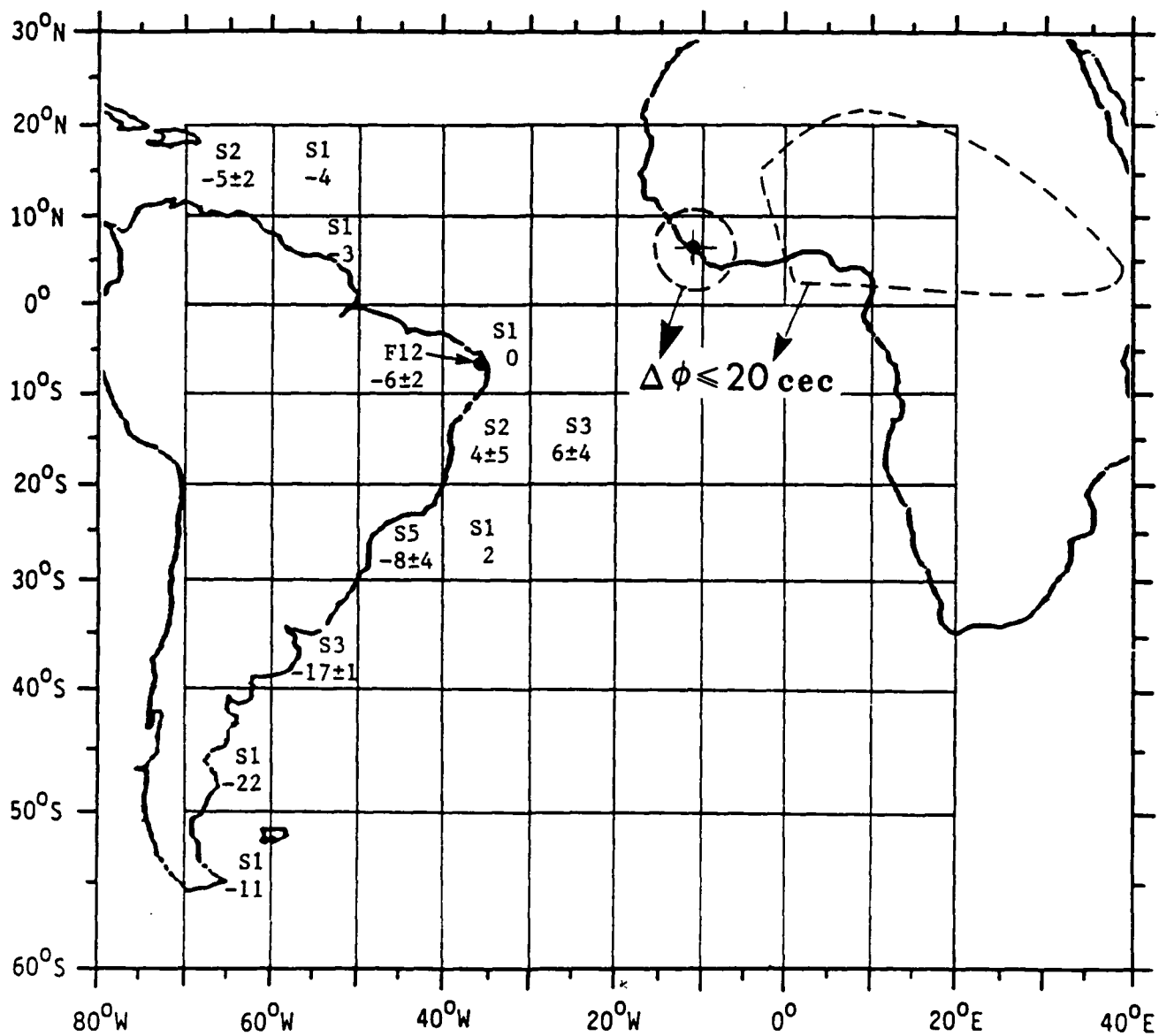


NIGHT PATH

LIBERIA (B)

NOVEMBER

18:00 GMT

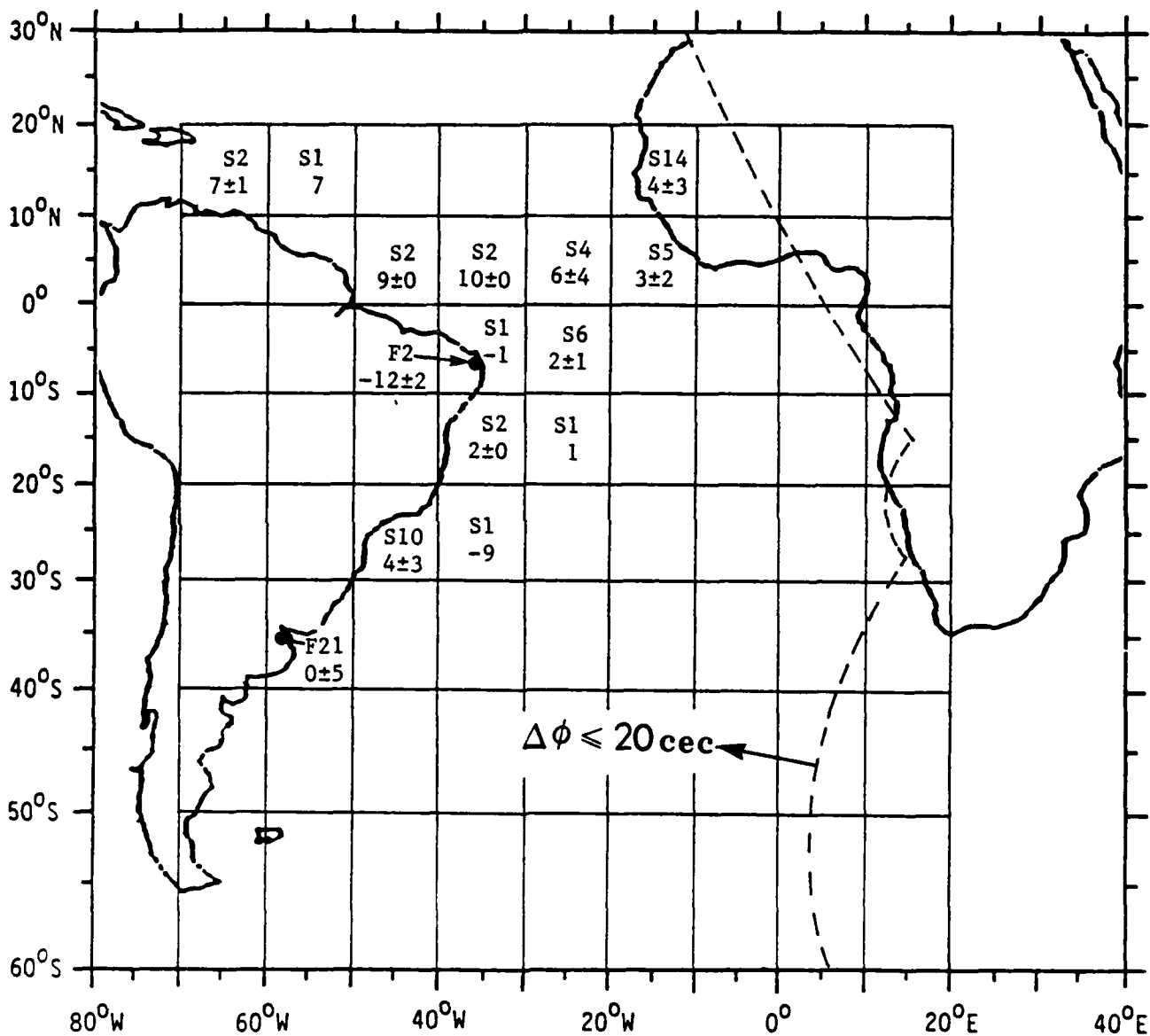


DAY PATH

HAWAII (C)

FEBRUARY

06:00 GMT

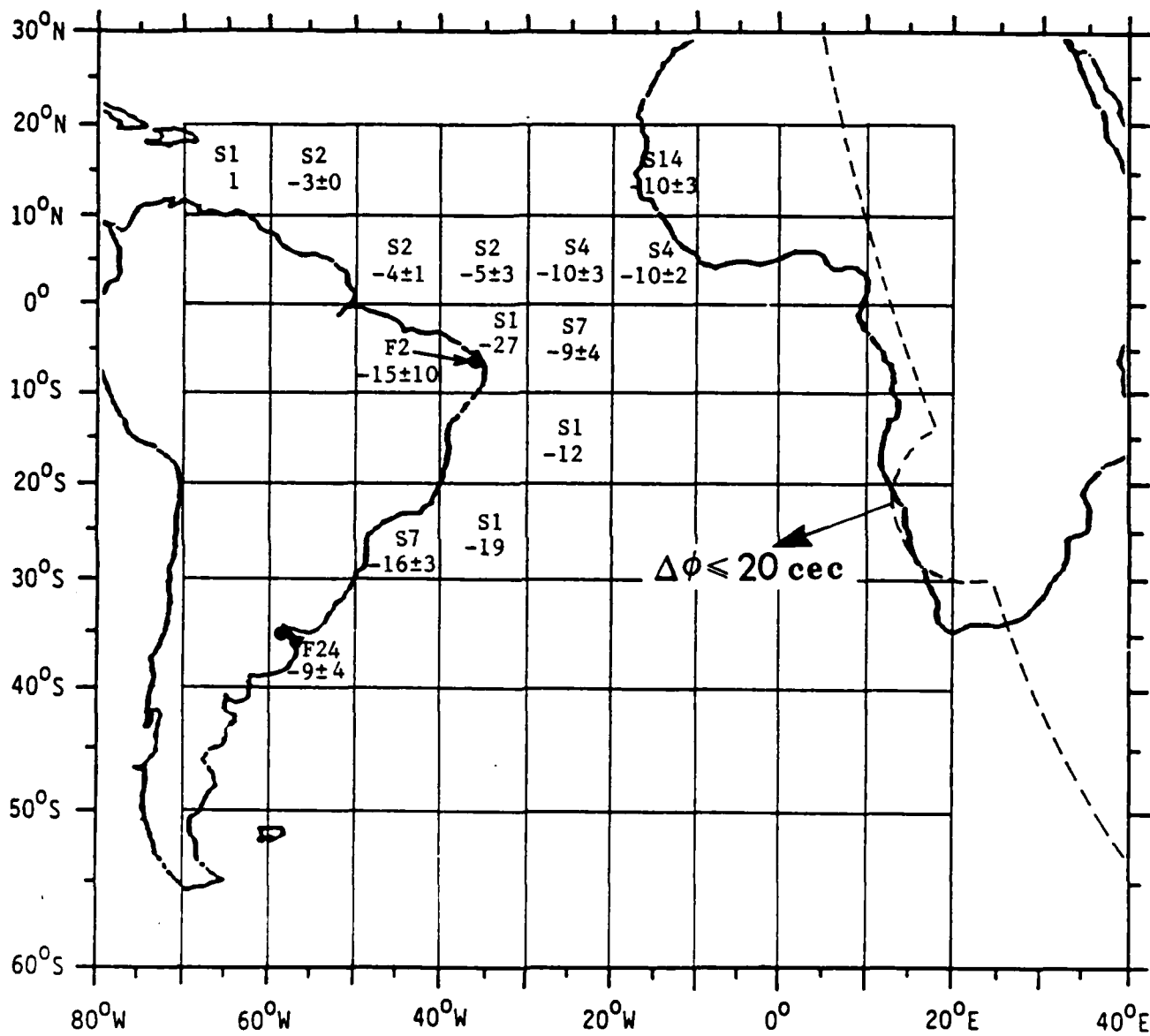


NIGHT PATH

HAWAII (C)

FEBRUARY

18:00 GMT

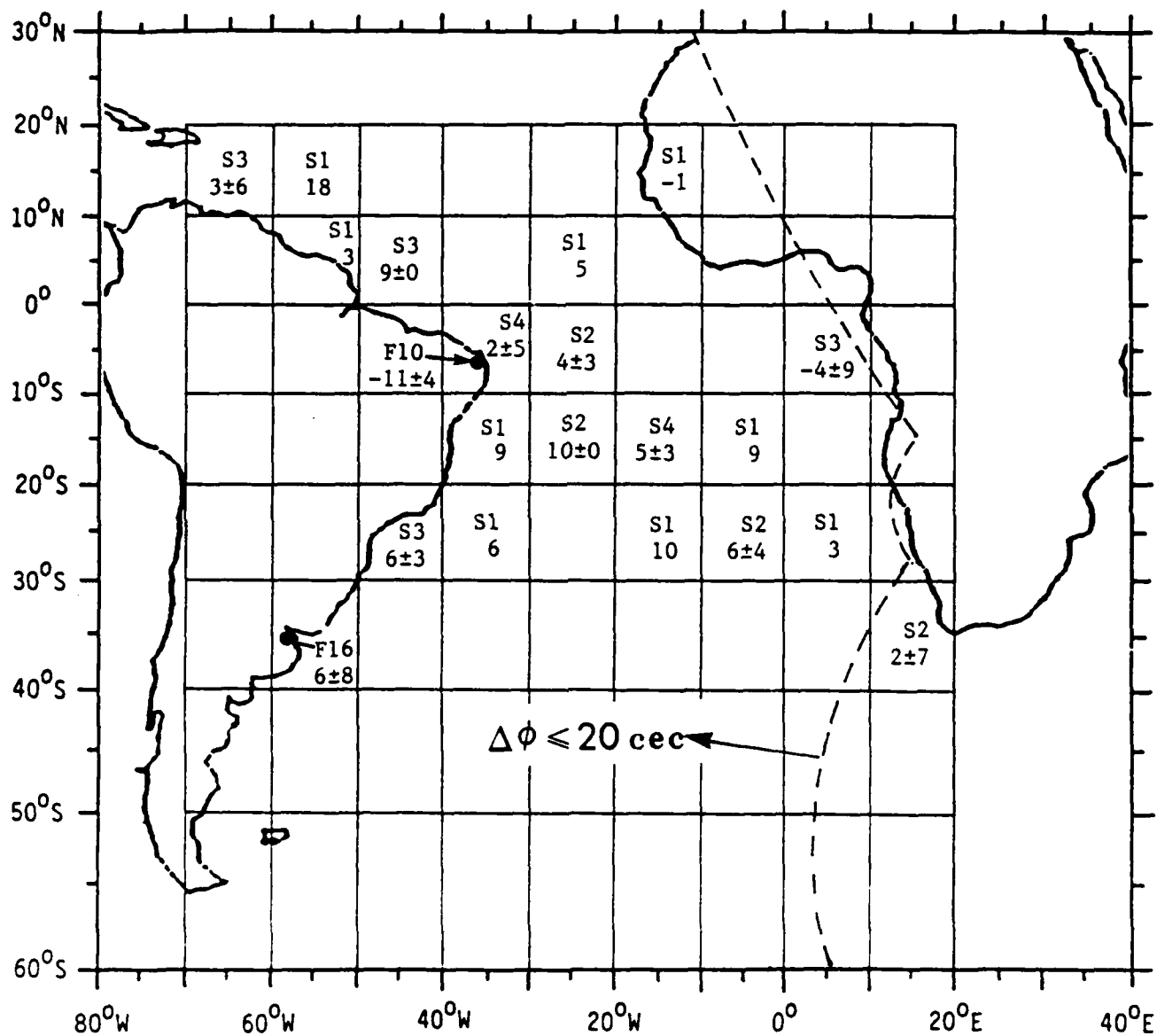


DAY PATH

HAWAII (C)

MAY

06:00 GMT

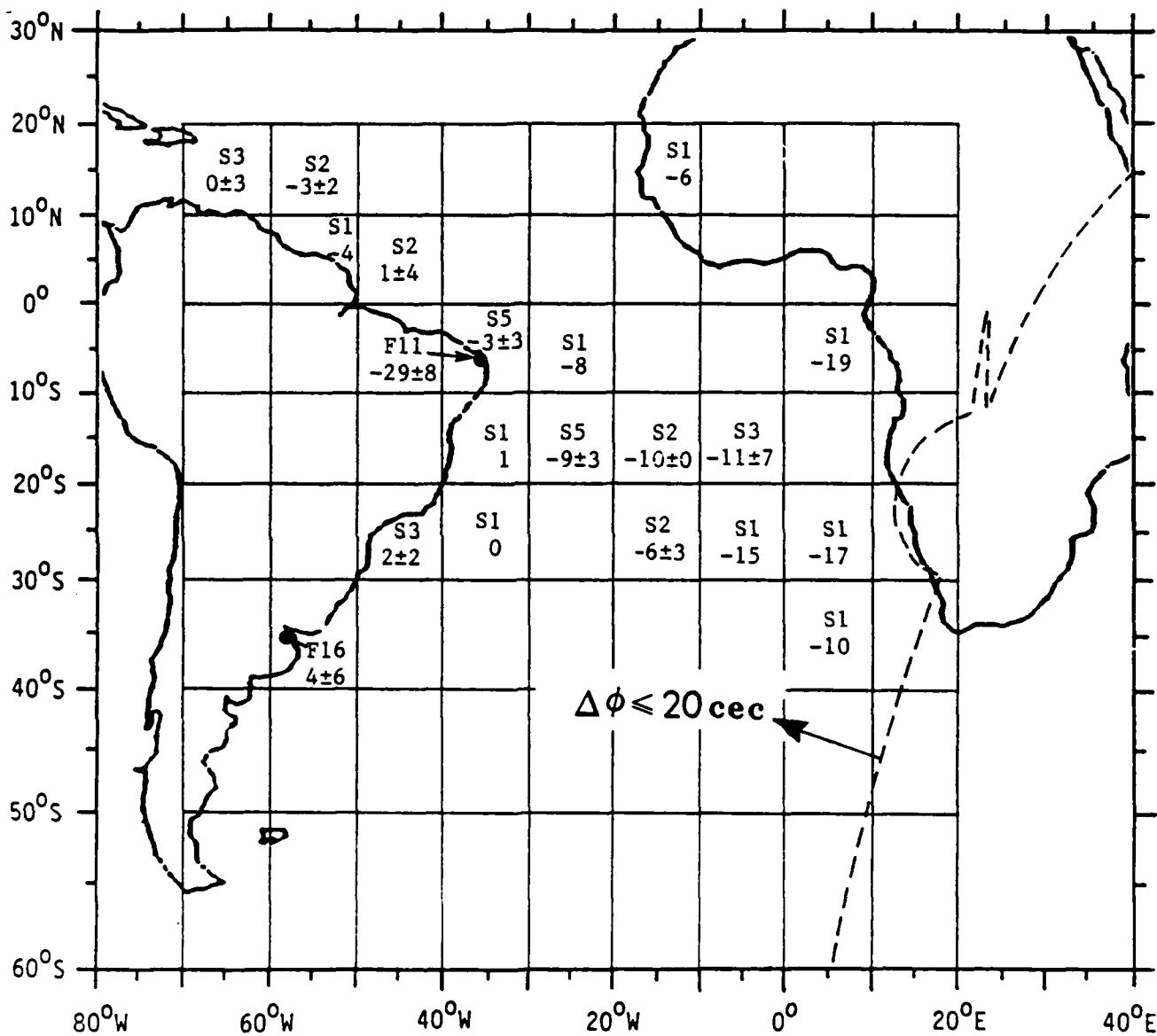


NIGHT PATH

HAWAII (C)

MAY

18:00 GMT



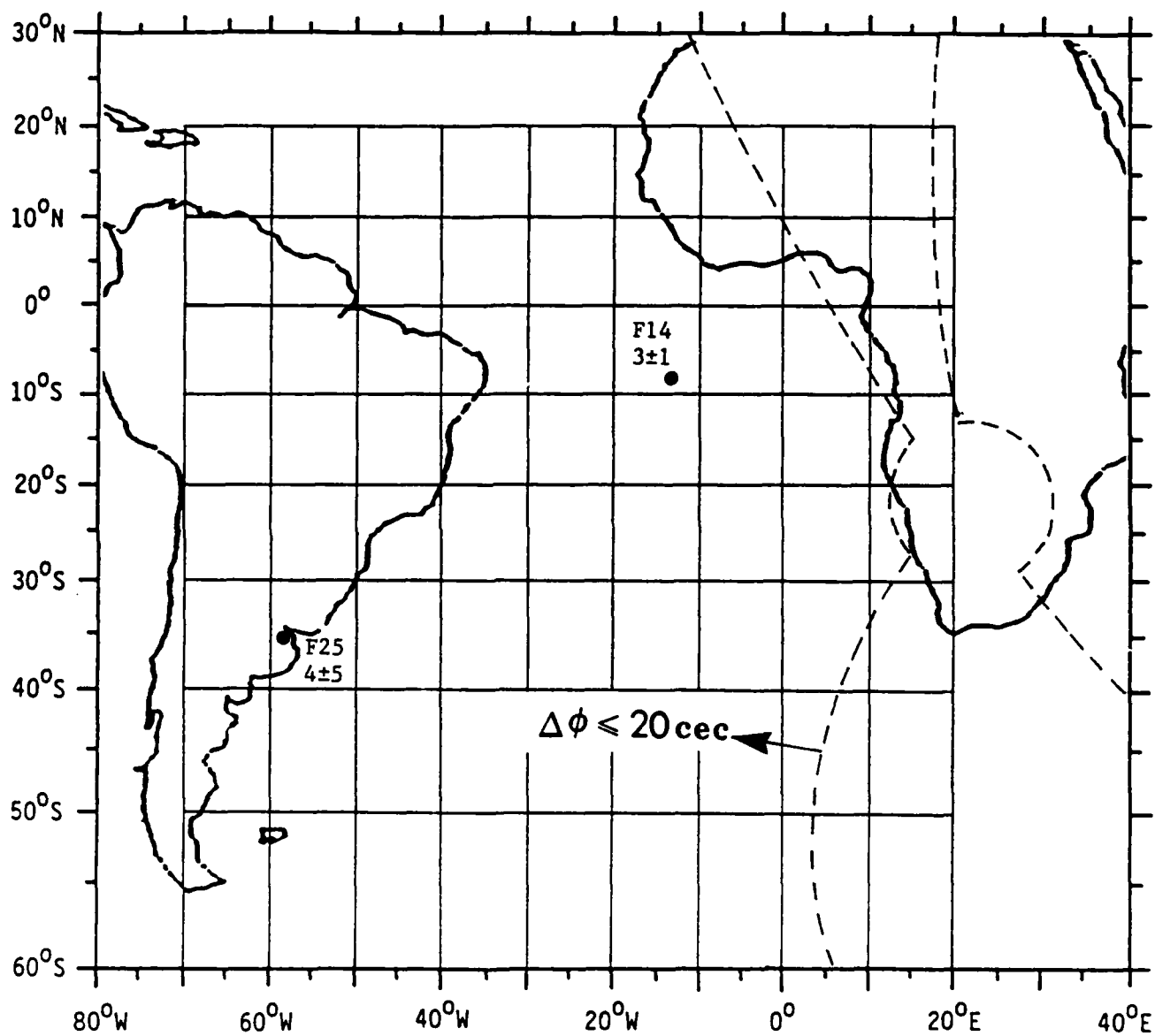
DAY PATH

HAWAII

(C)

AUGUST

06:00 GMT



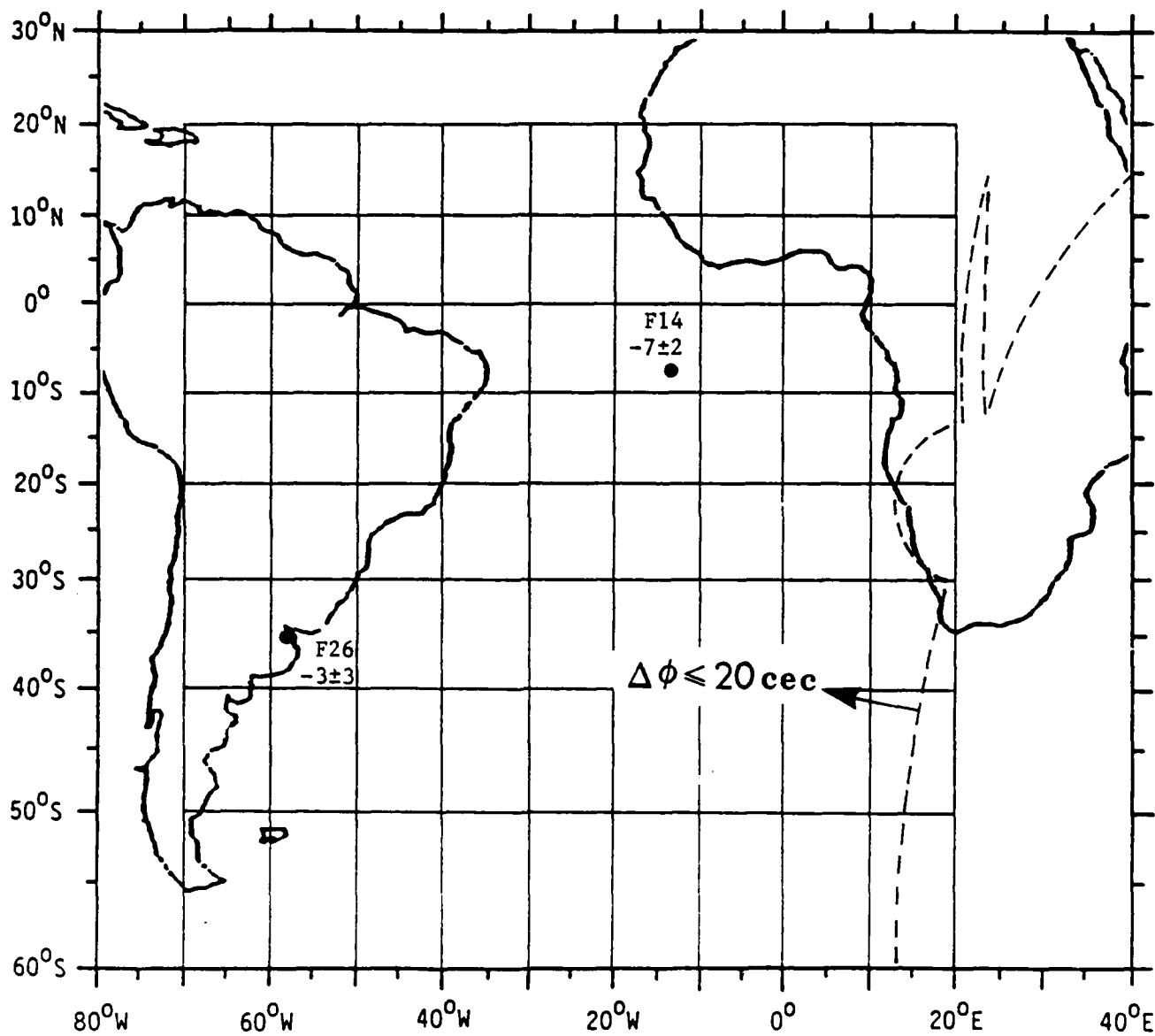
NIGHT PATH

HAWAII

(C)

AUGUST

18:00 GMT

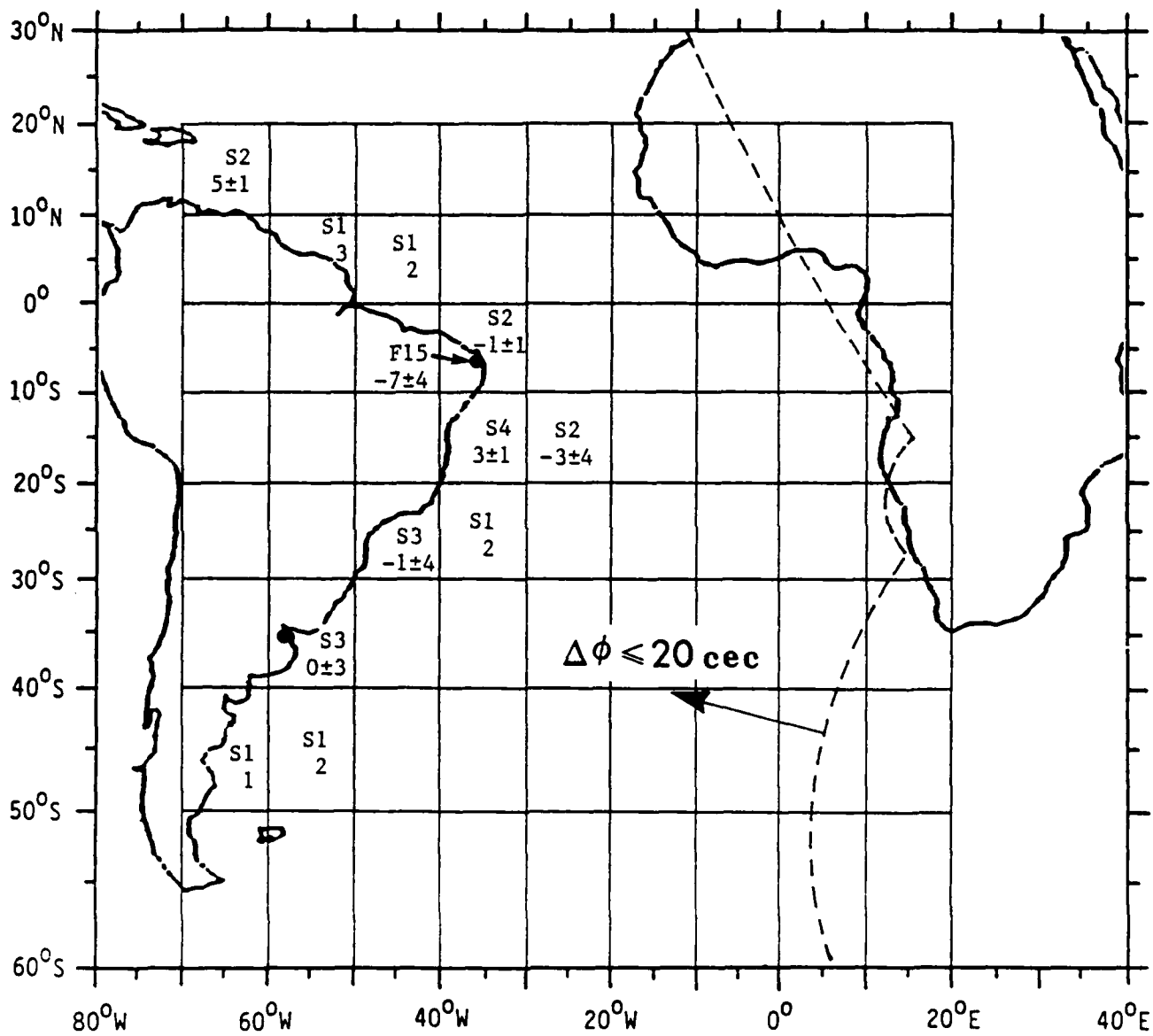


DAY PATH

HAWAII (C)

NOVEMBER

06:00 GMT

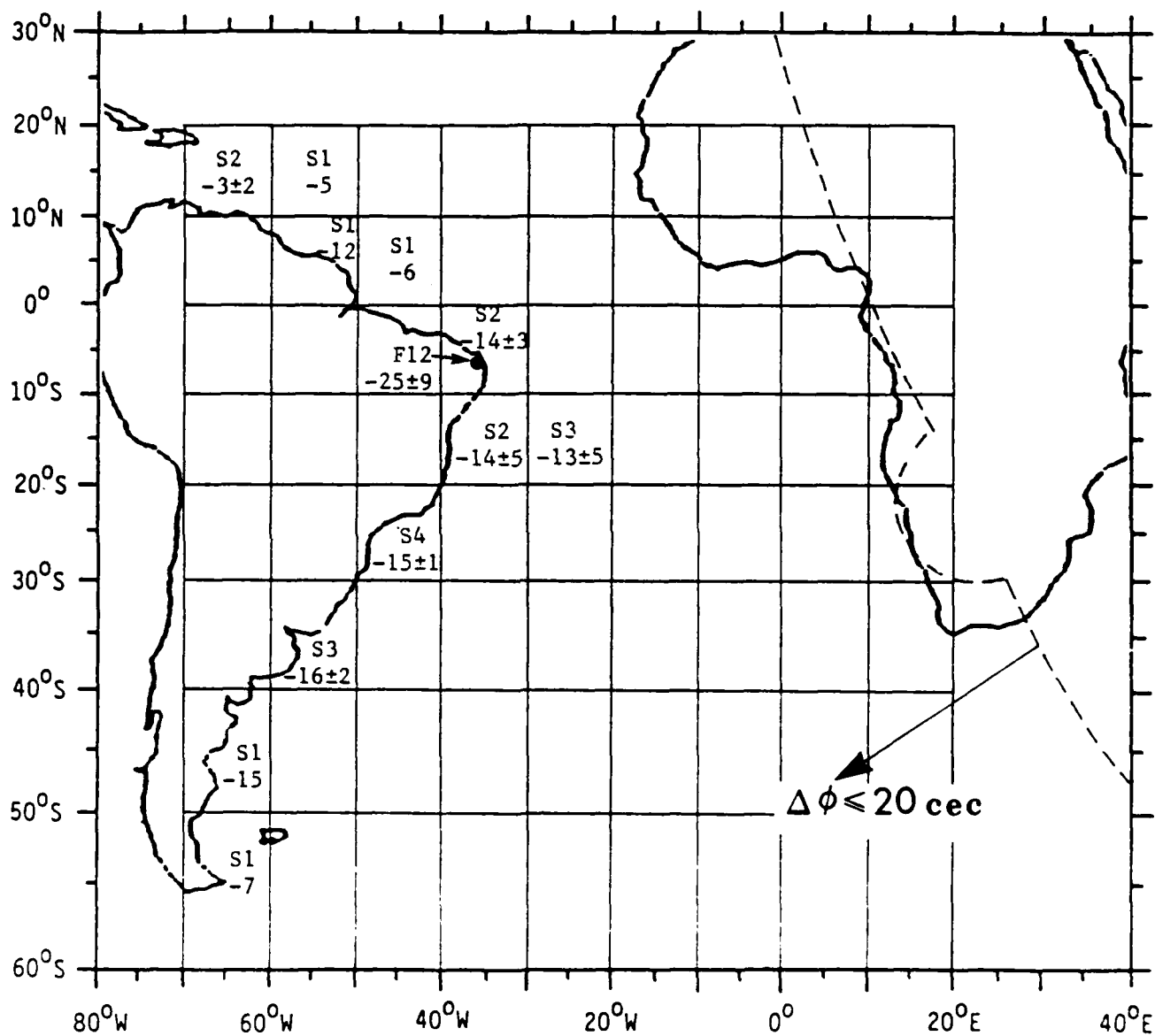


NIGHT PATH

HAWAII (C)

NOVEMBER

18:00 GMT

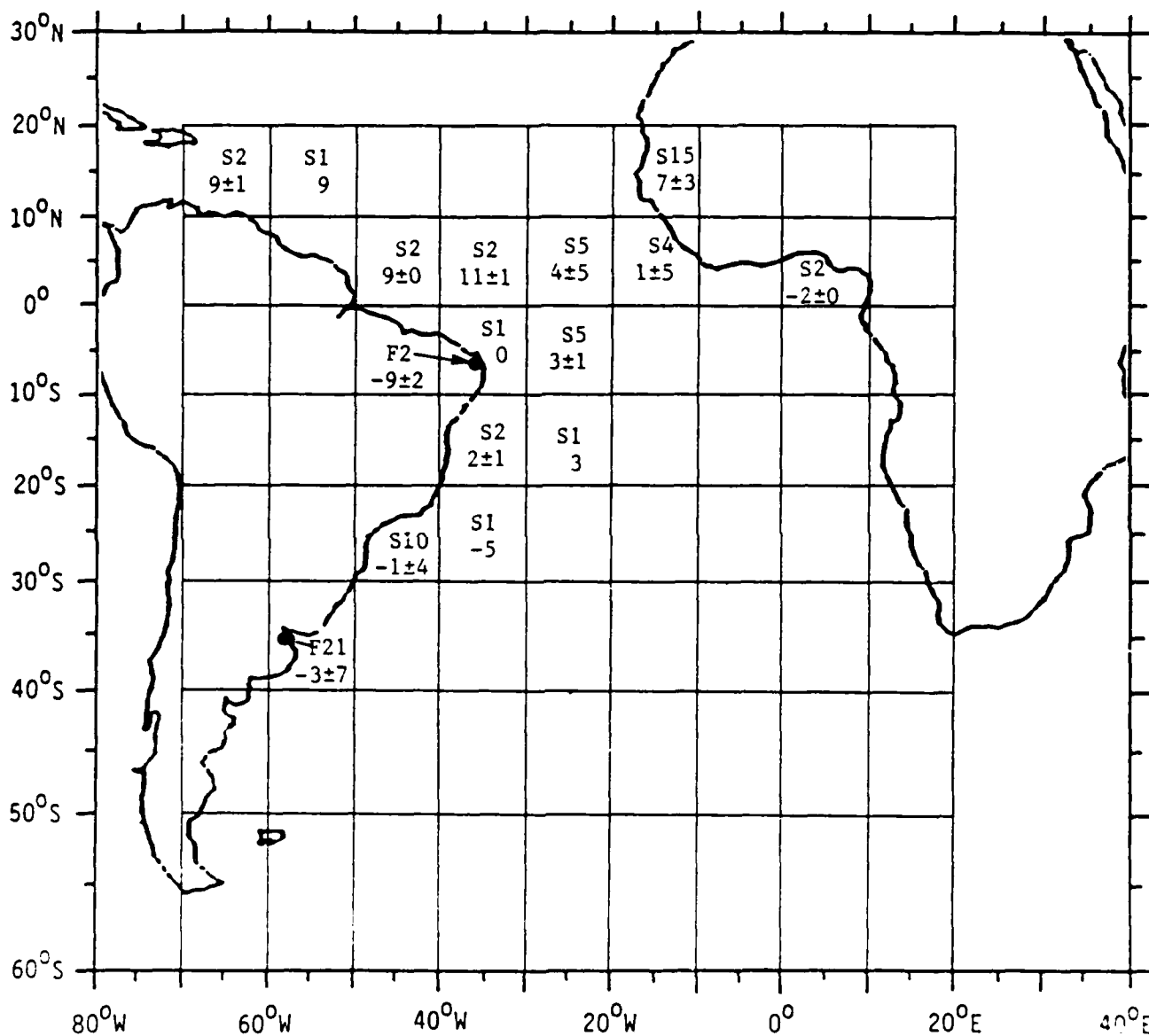


DAY PATH

NORTH DAKOTA (D)

FEBRUARY

06:00 GMT



NIGHT PATH

AD-A181 435

SOUTH ATLANTIC OMEGA VALIDATION VOLUME 2 APPENDICES F-L 2/4

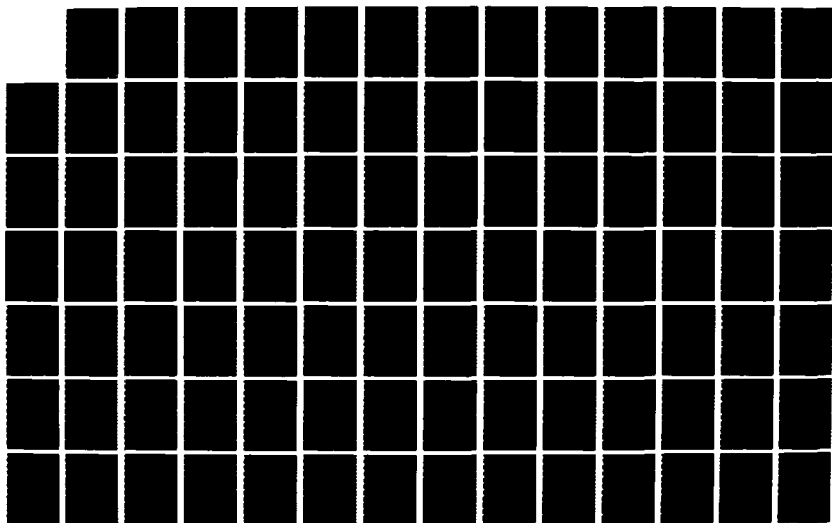
(U) SYSTEMS CONTROL TECHNOLOGY INC PALO ALTO CA

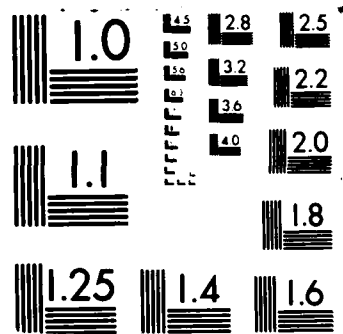
T M WATT ET AL JAN 83 DTCG23-81-C-48823

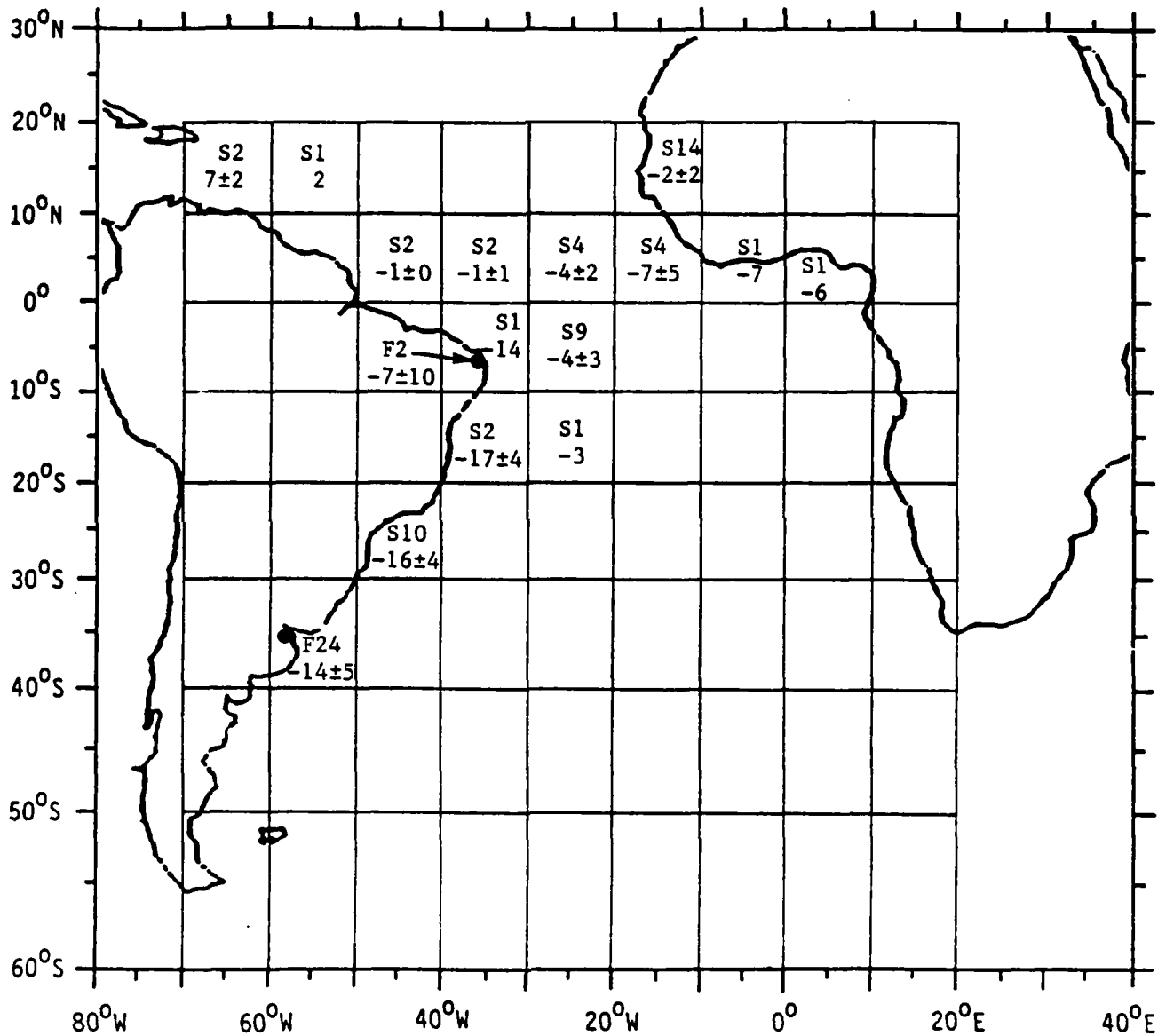
UNCLASSIFIED

F/G 17/7

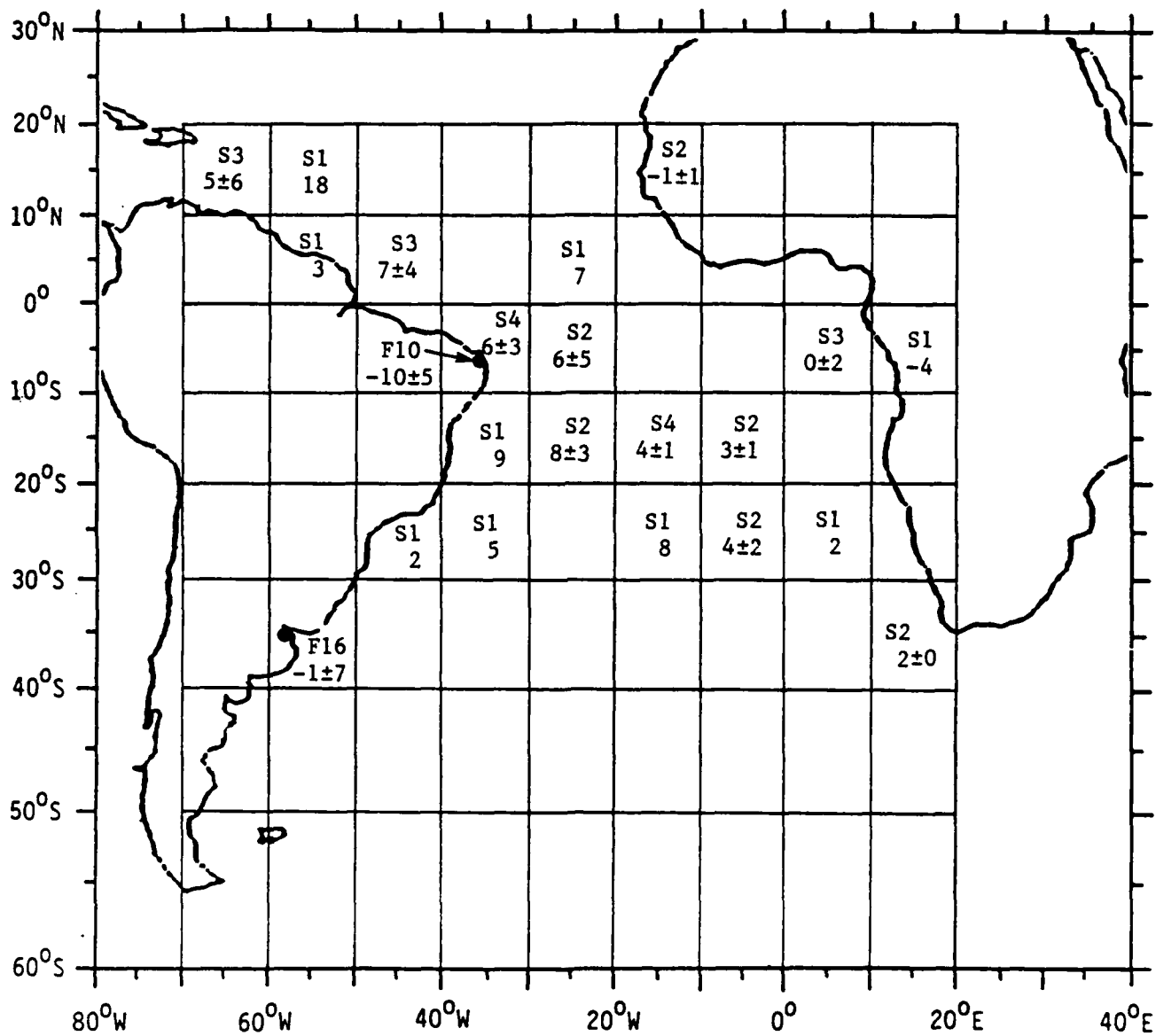
NL







DAY PATH

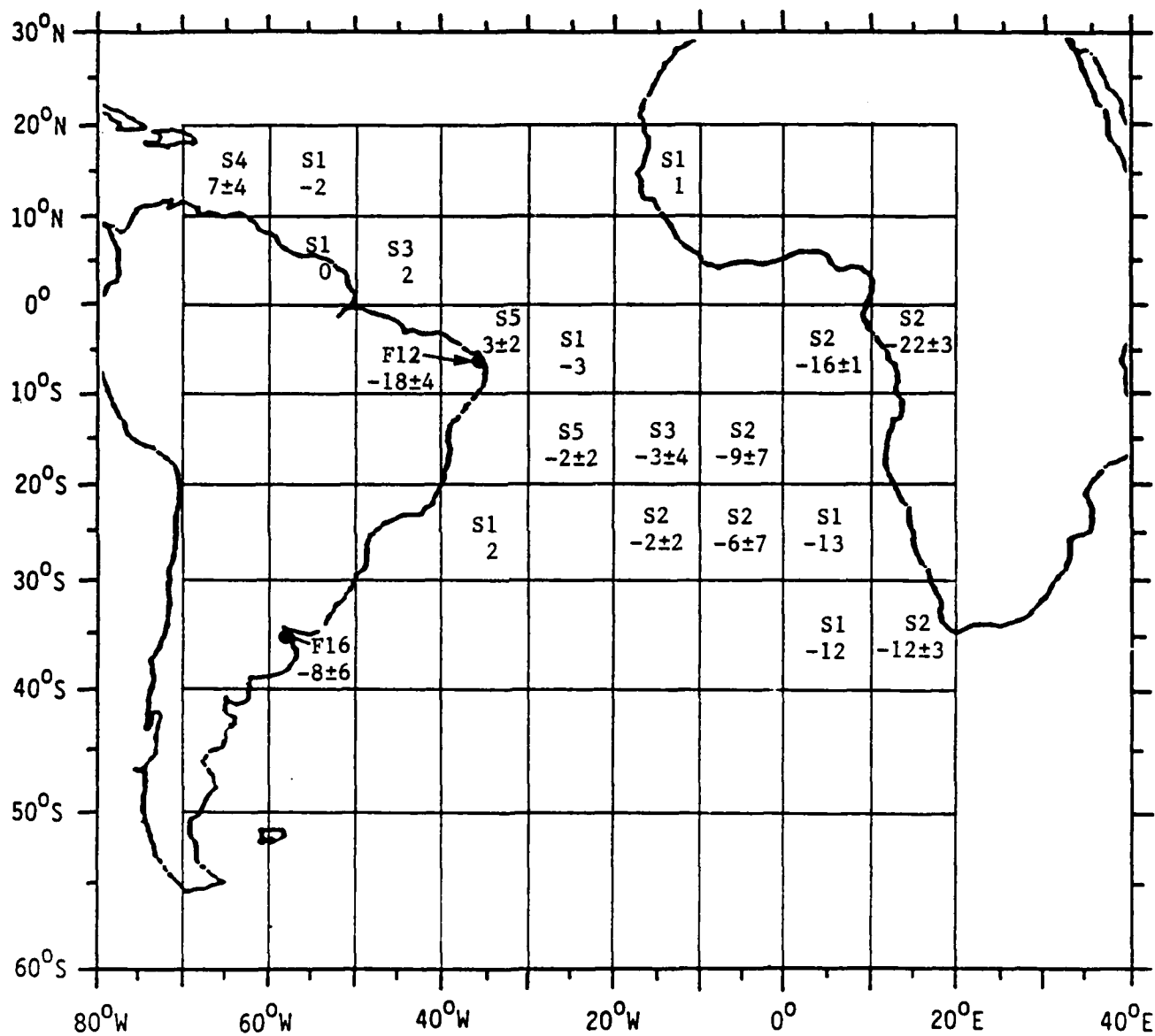


NIGHT PATH

NORTH DAKOTA (D)

MAY

18:00 GMT

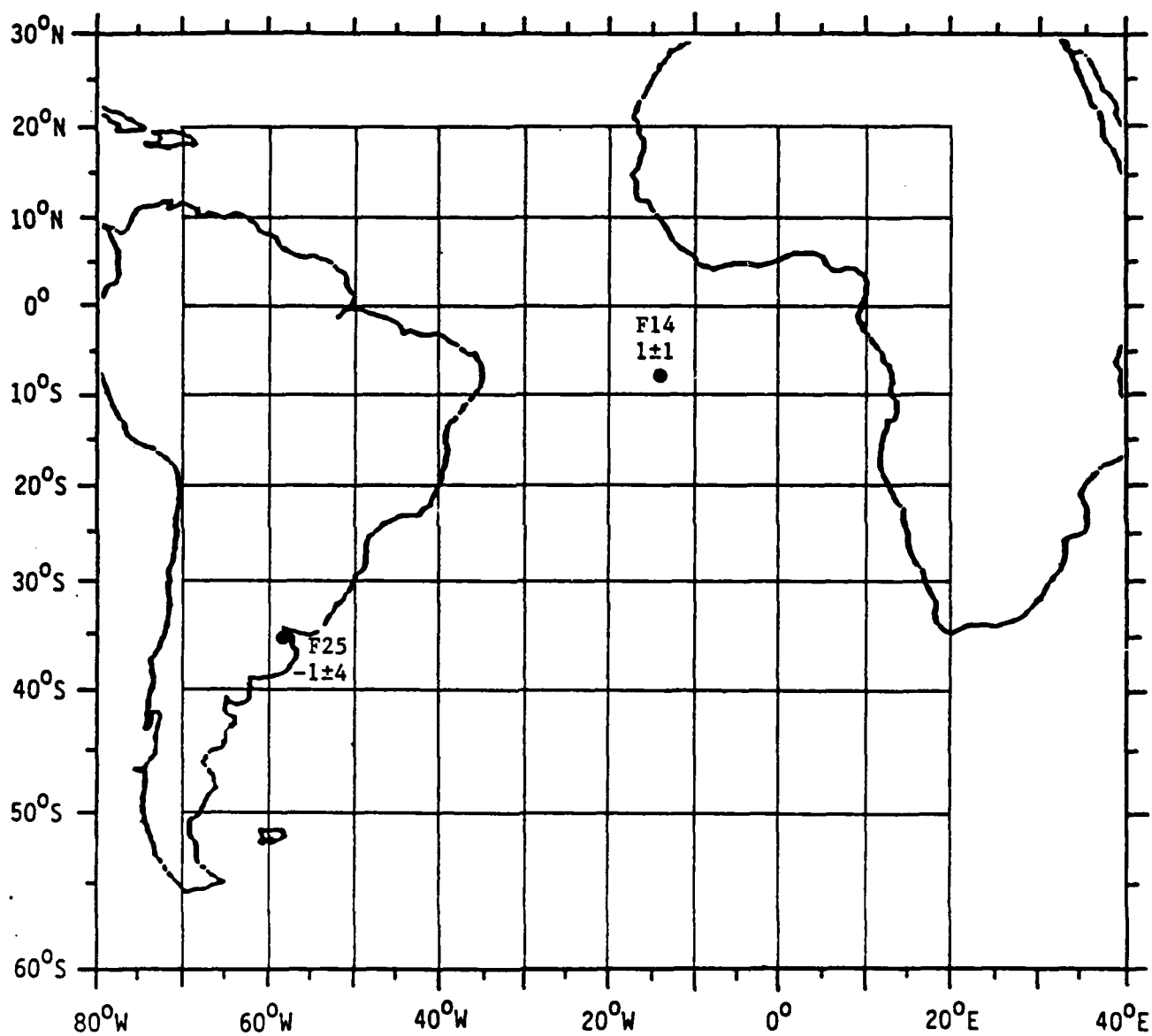


DAY PATH

NORTH DAKOTA (D)

AUGUST

06:00 GMT

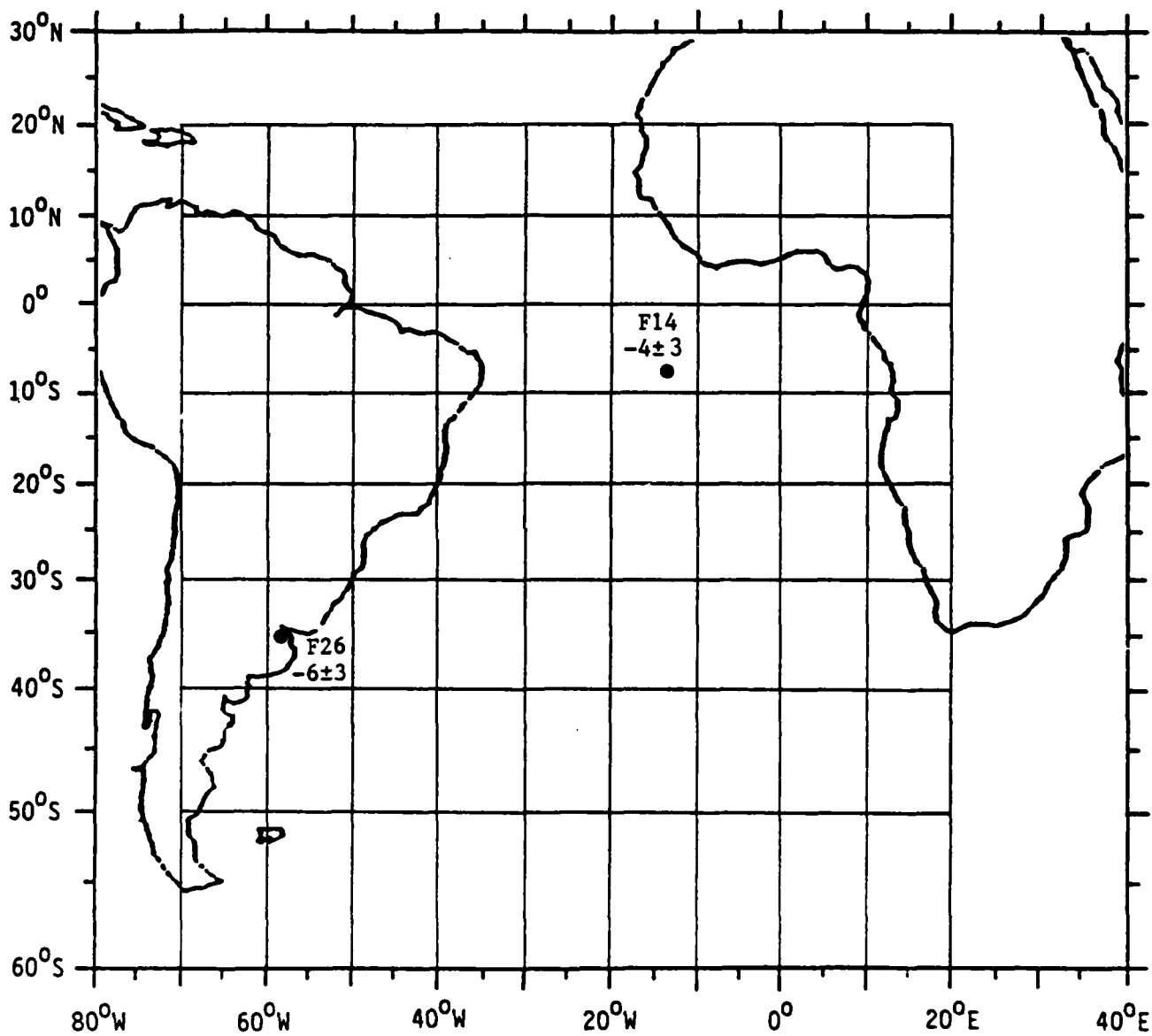


NIGHT PATH

NORTH DAKOTA (D)

AUGUST

18:00 GMT

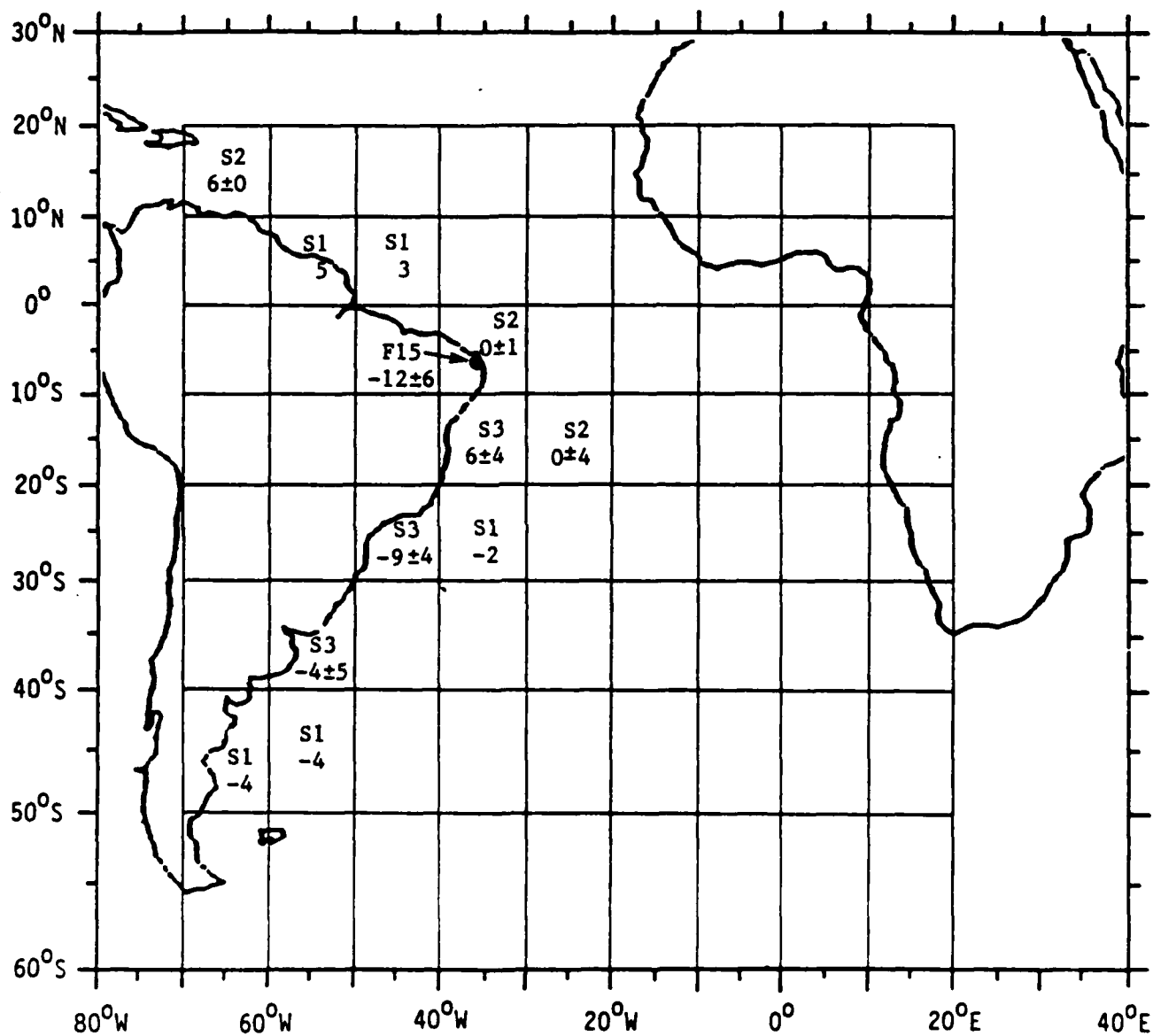


DAY PATH

NORTH DAKOTA (D)

NOVEMBER

06:00 GMT

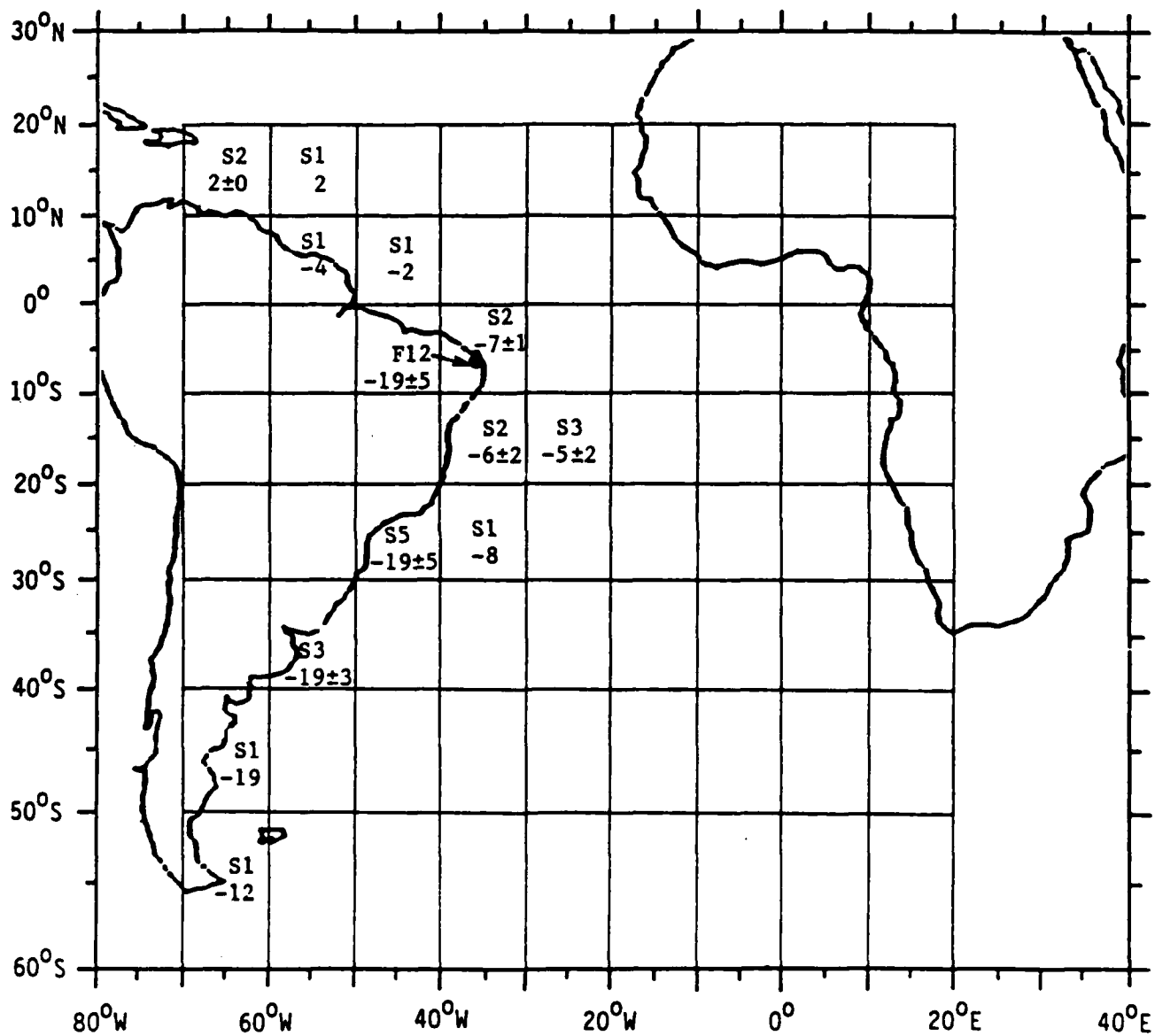


NIGHT PATH

NORTH DAKOTA (D)

NOVEMBER

18:00 GMT

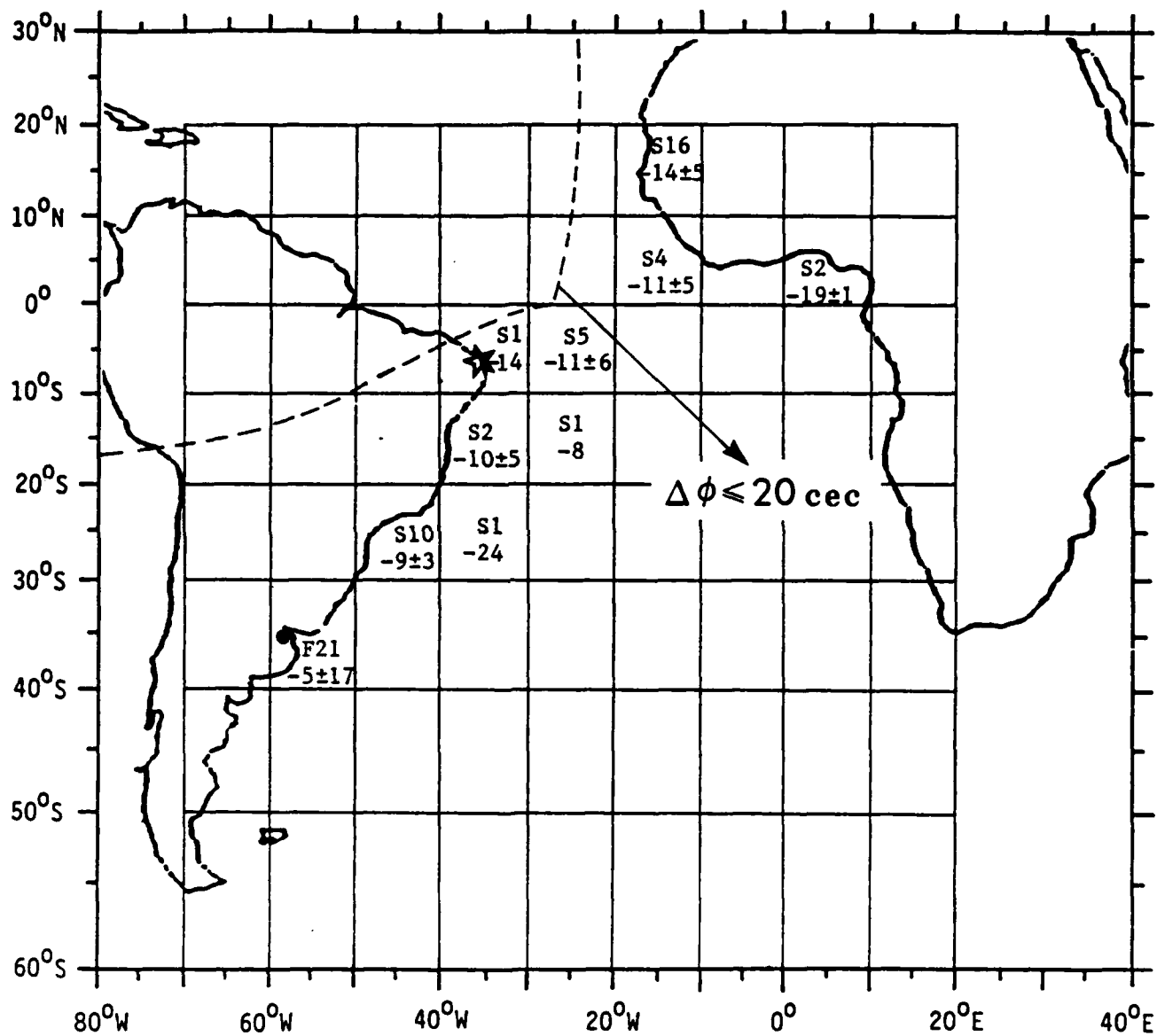


DAY PATH

LA REUNION (E)

FEBRUARY

06:00 GMT



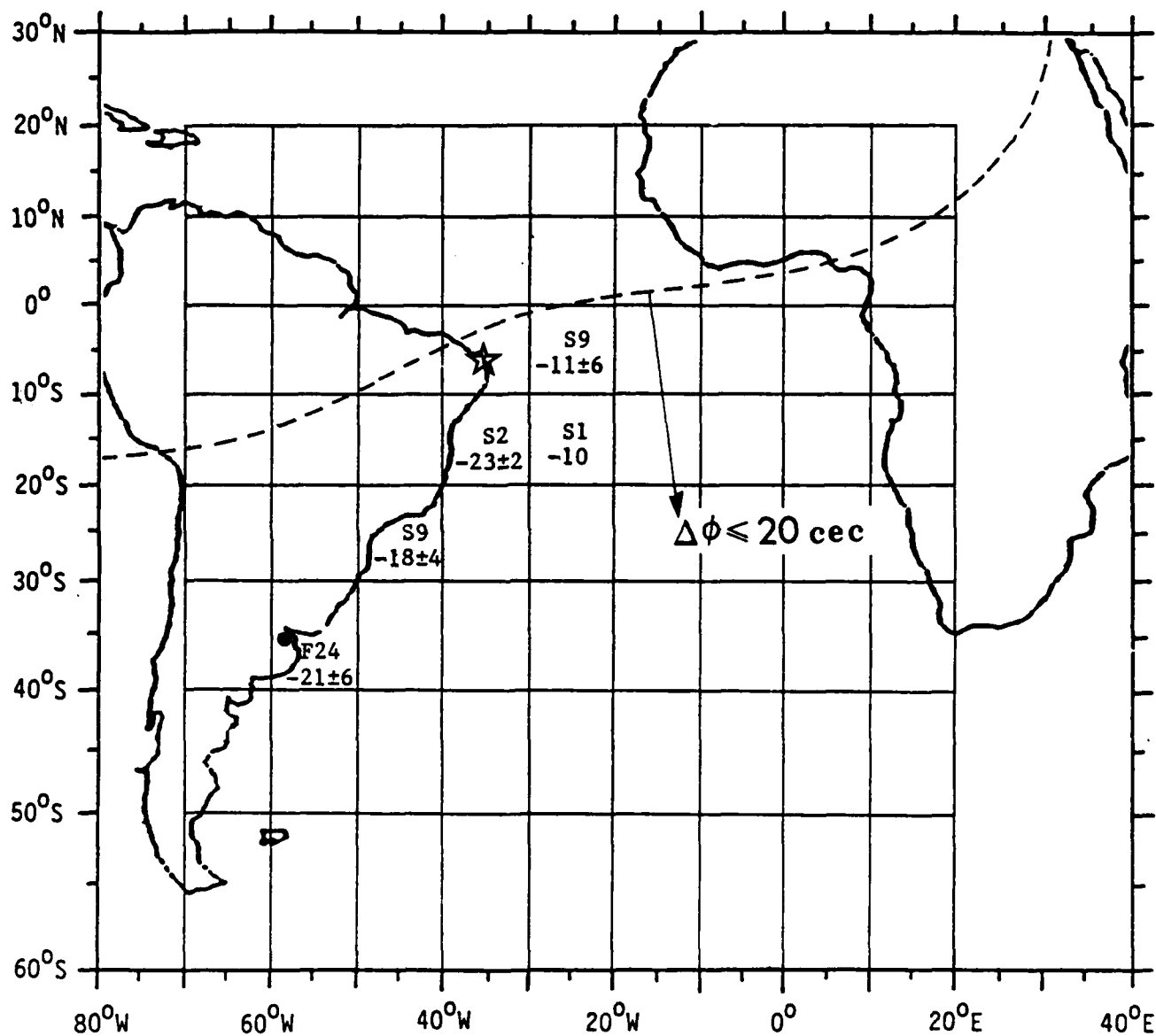
★ NATAL, BRAZIL
MEAN SNR ≤ -30 dB

DAY PATH

LA REUNION (E)

FEBRUARY

18:00 GMT



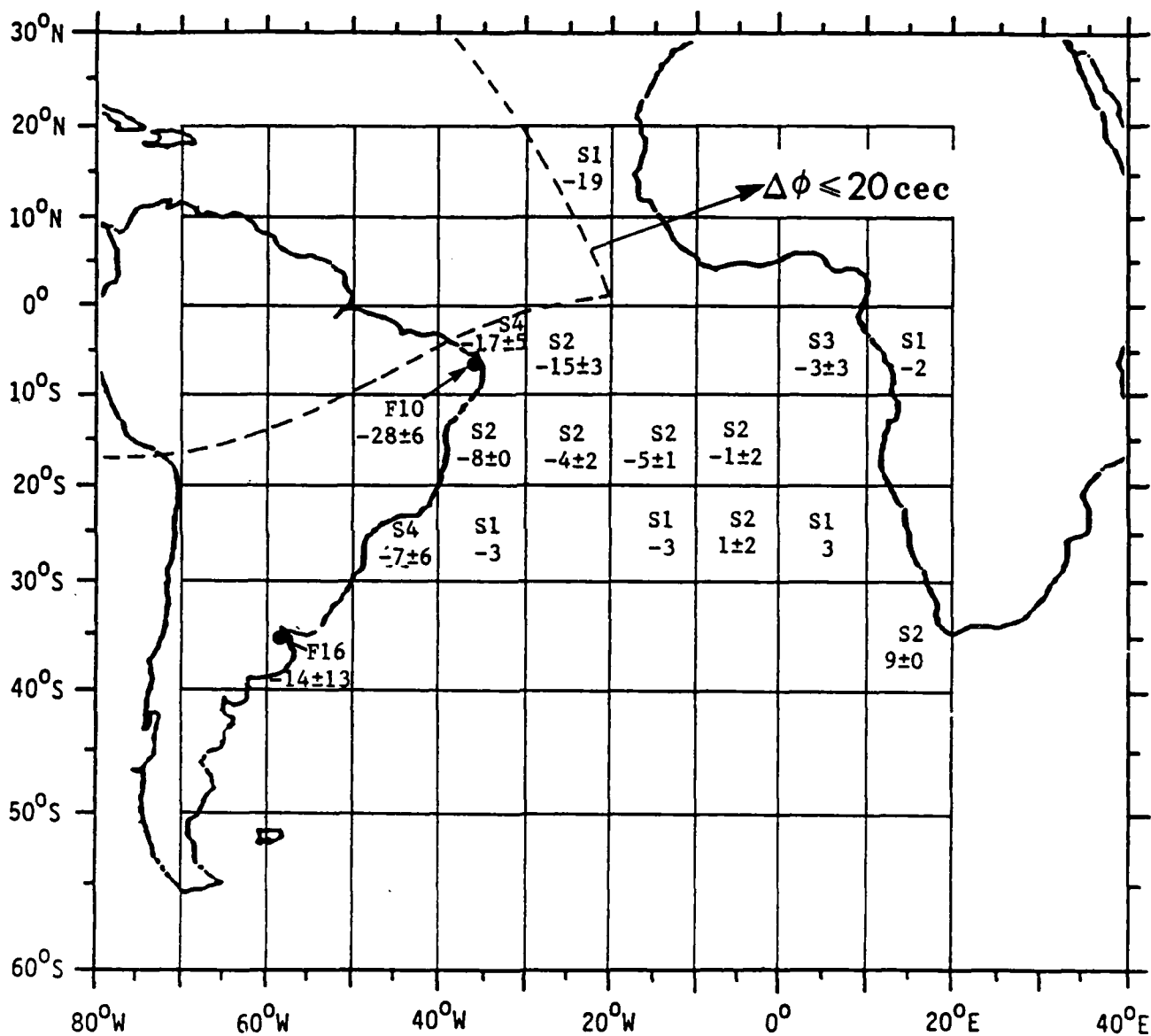
NIGHT PATH

★ NATAL, BRAZIL
MEAN SNR ≤ -30 dB

LA REUNION (E)

MAY

06:00 GMT

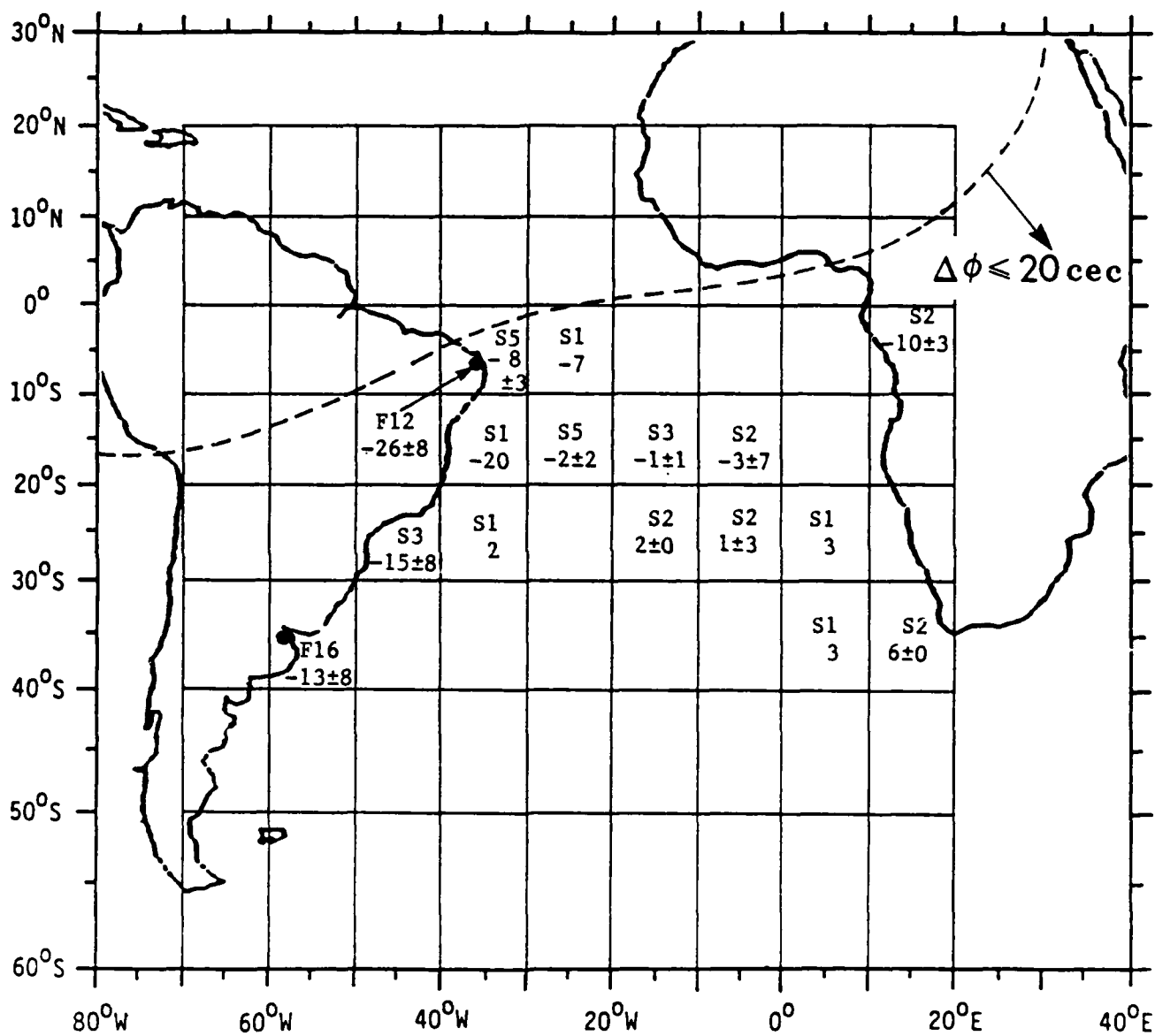


DAY PATH

LA REUNION (E)

MAY

18:00 GMT

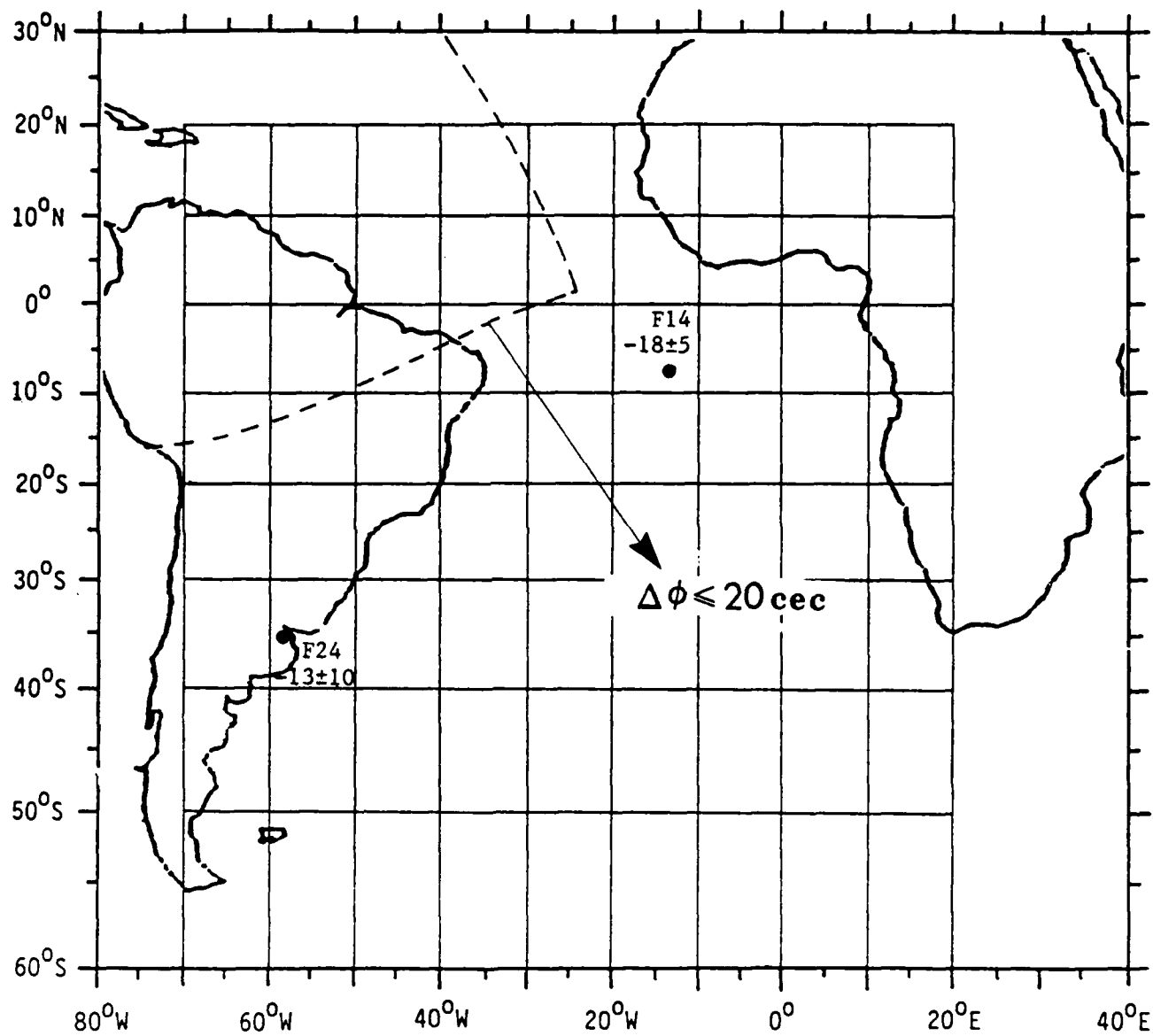


NIGHT PATH

LA REUNION (E)

AUGUST

06:00 GMT

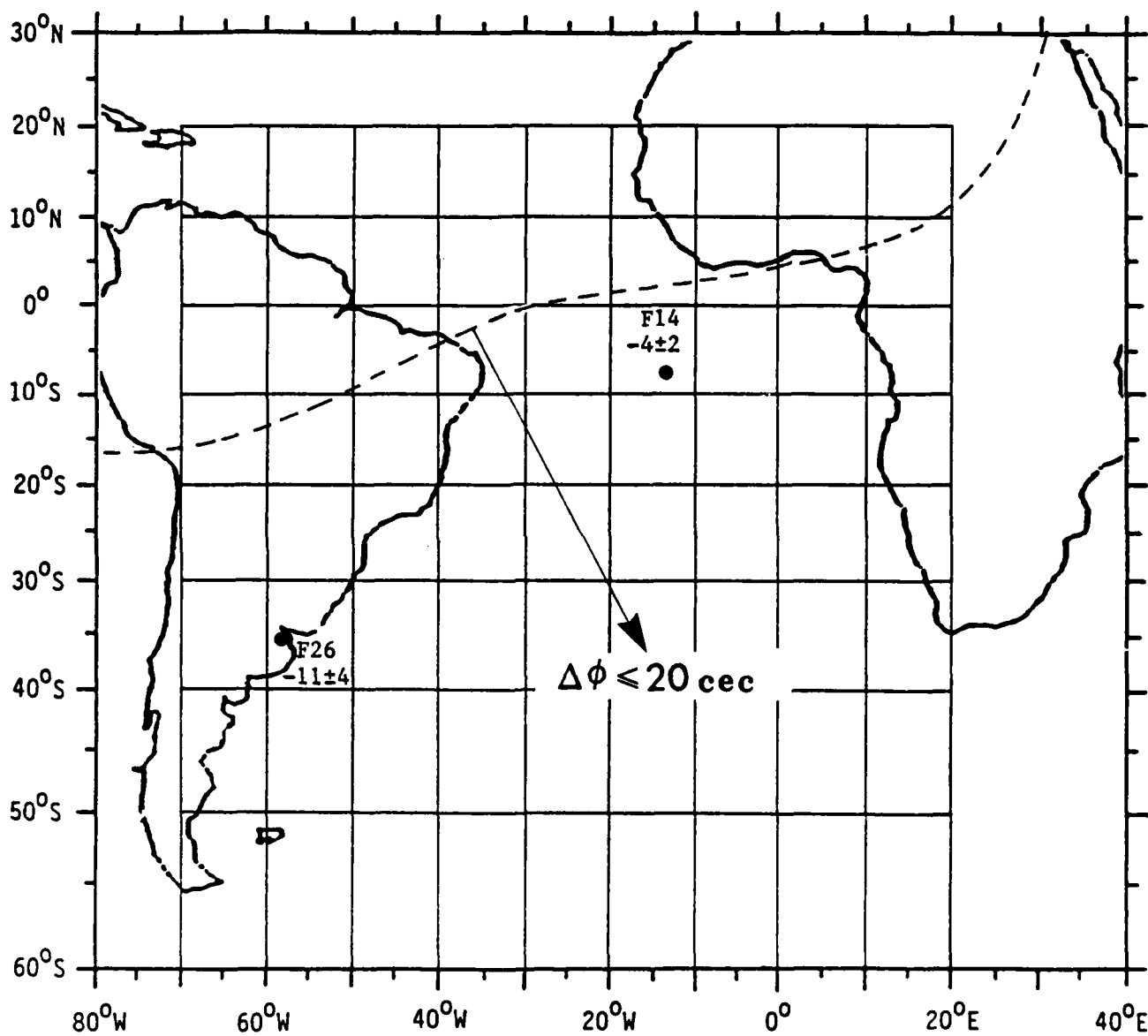


DAY PATH

LA REUNION (E)

AUGUST

18:00 GMT

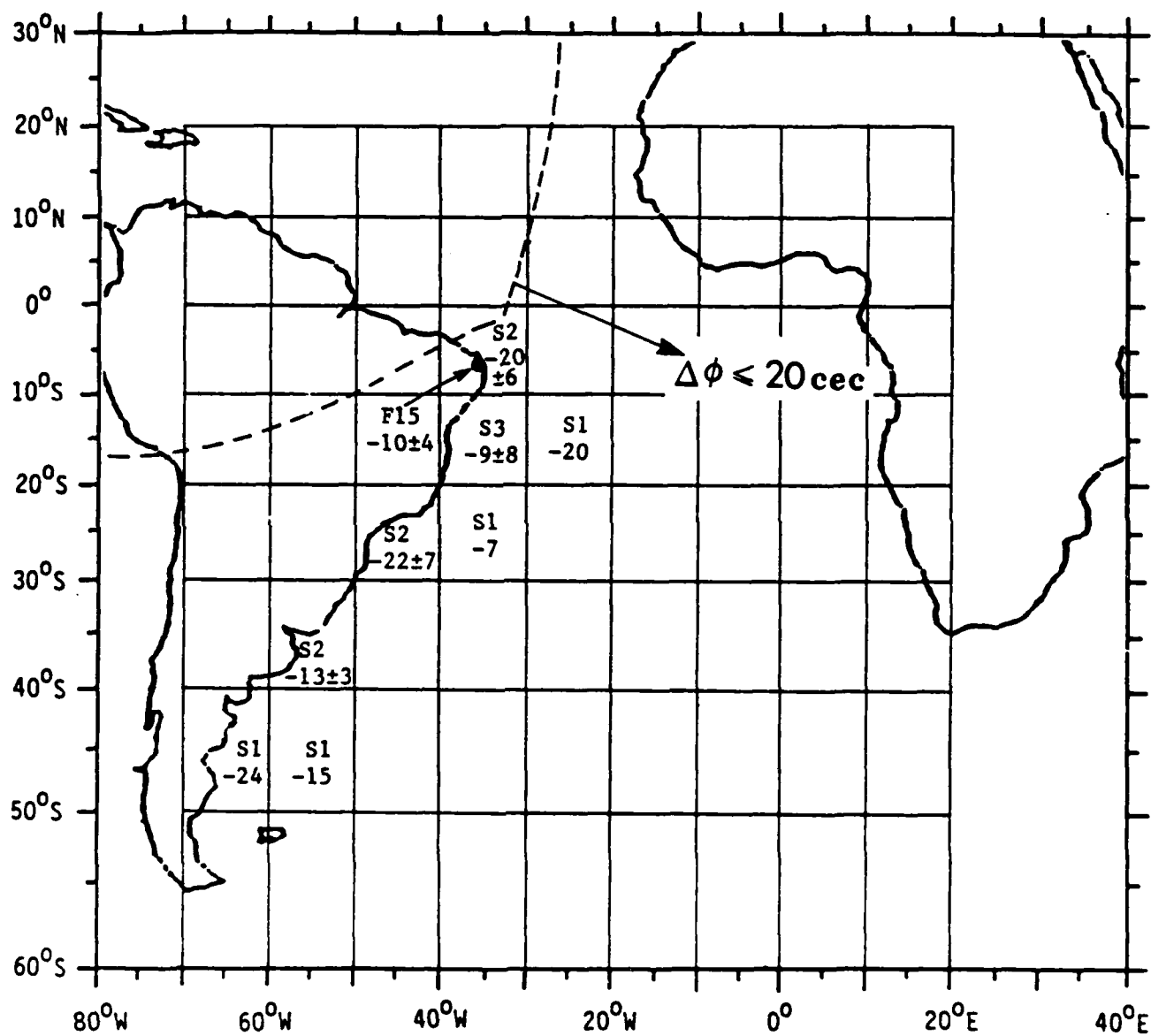


NIGHT PATH

LA REUNION (E)

NOVEMBER

06:00 GMT

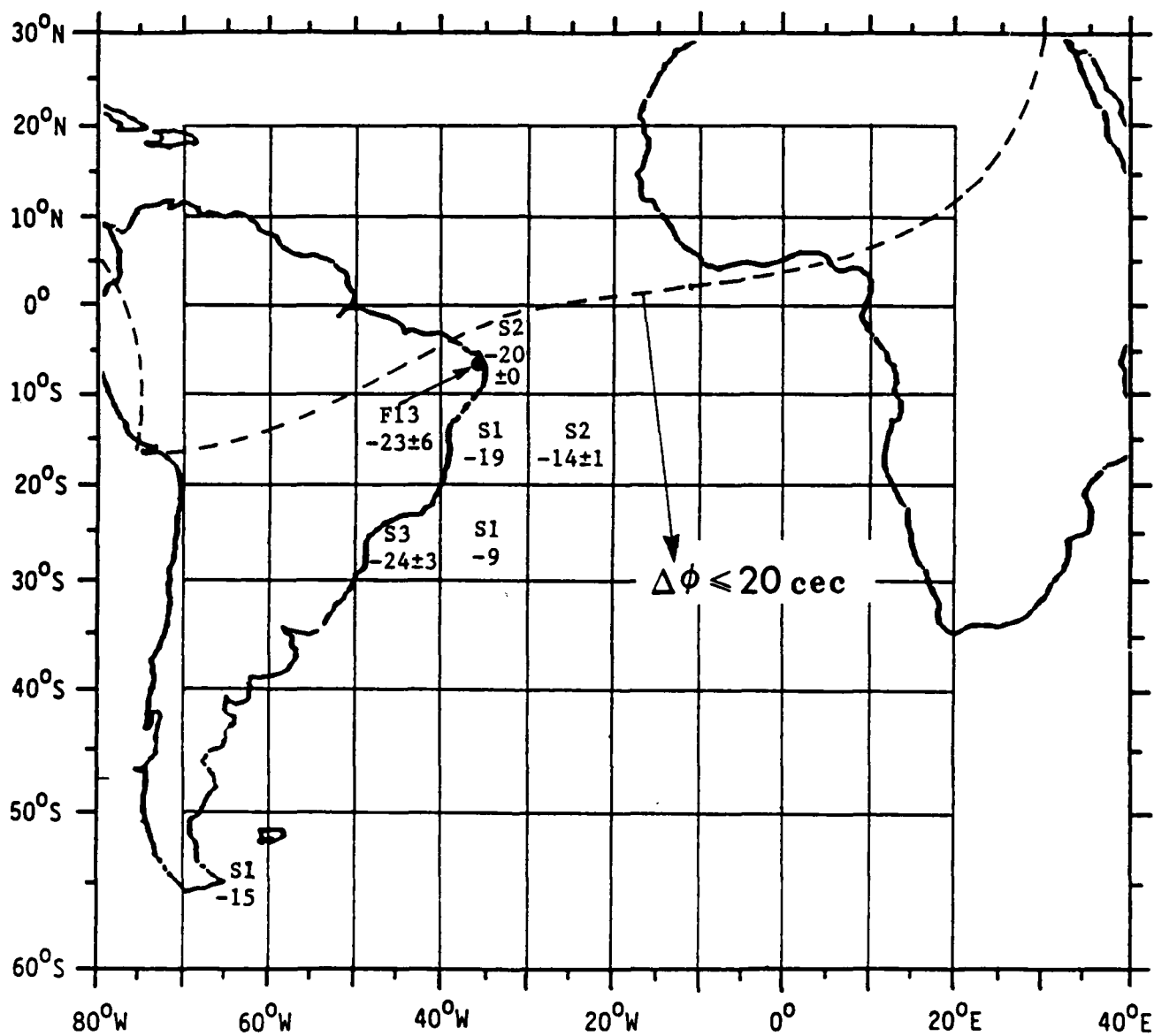


DAY PATH

LA REUNION (E)

NOVEMBER

18:00 GMT

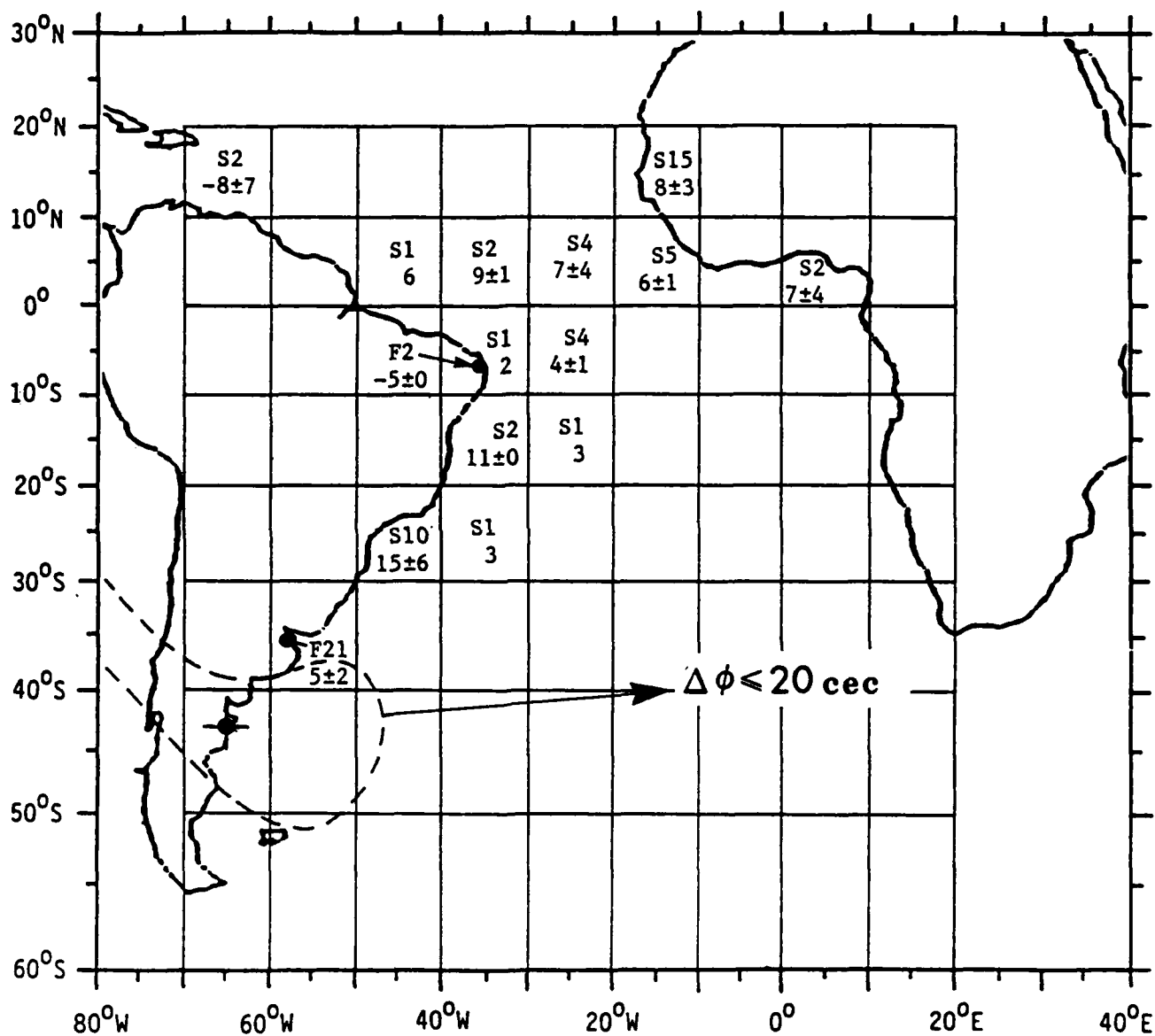


NIGHT PATH

ARGENTINA (F)

FEBRUARY

06:00 GMT

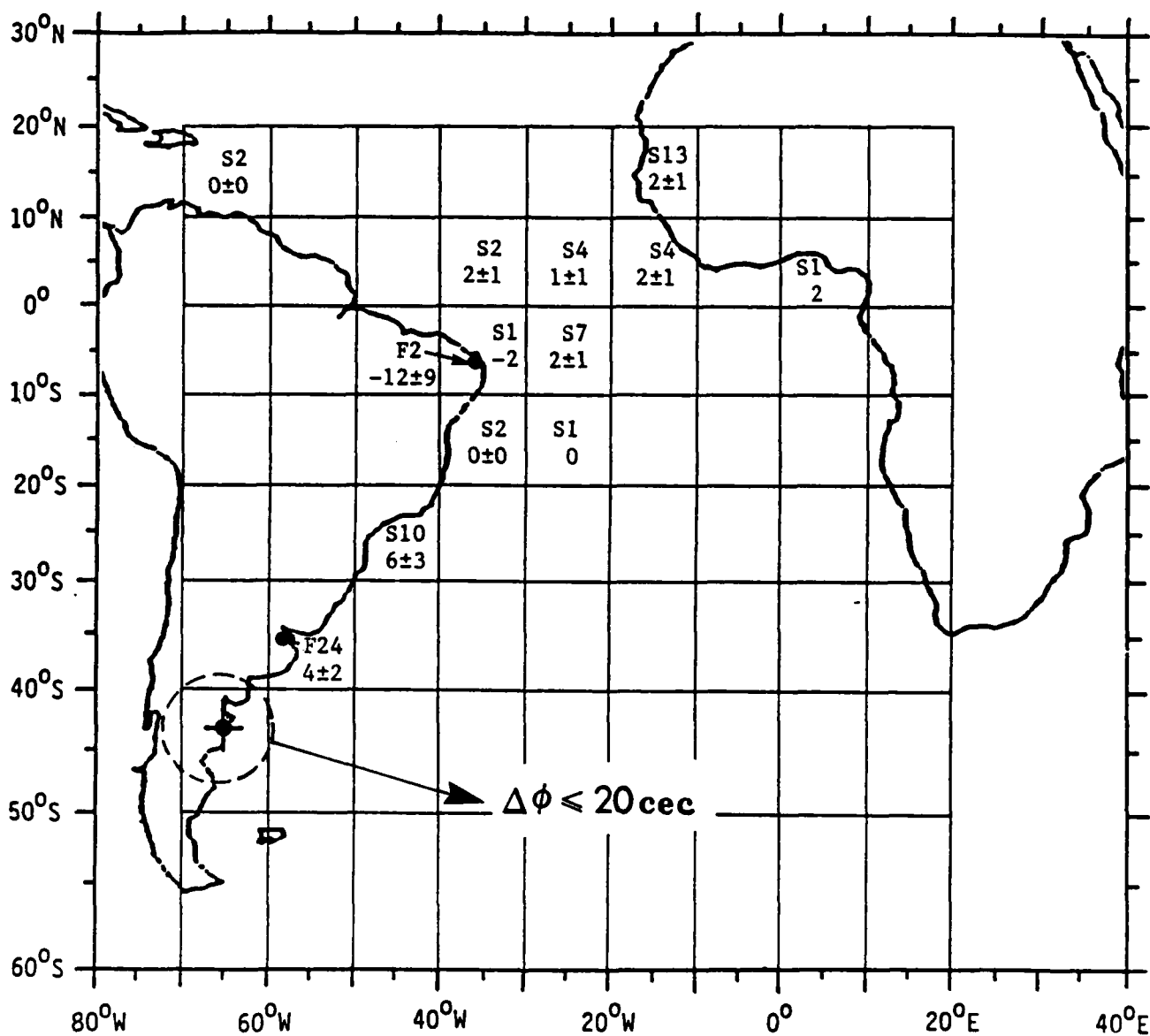


NIGHT PATH

ARGENTINA (F)

FEBRUARY

18:00 GMT

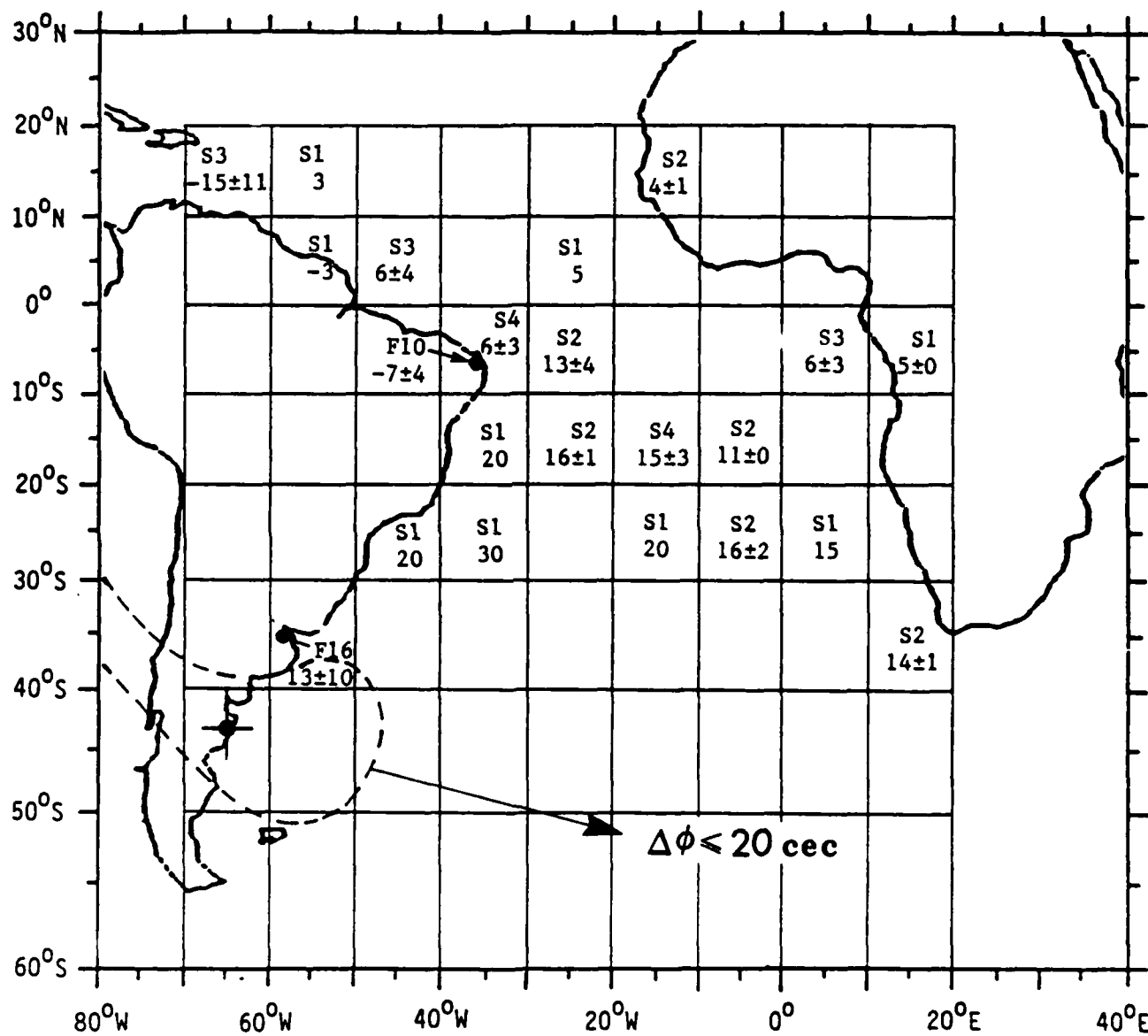


DAY PATH

ARGENTINA (F)

MAY

06:00 GMT

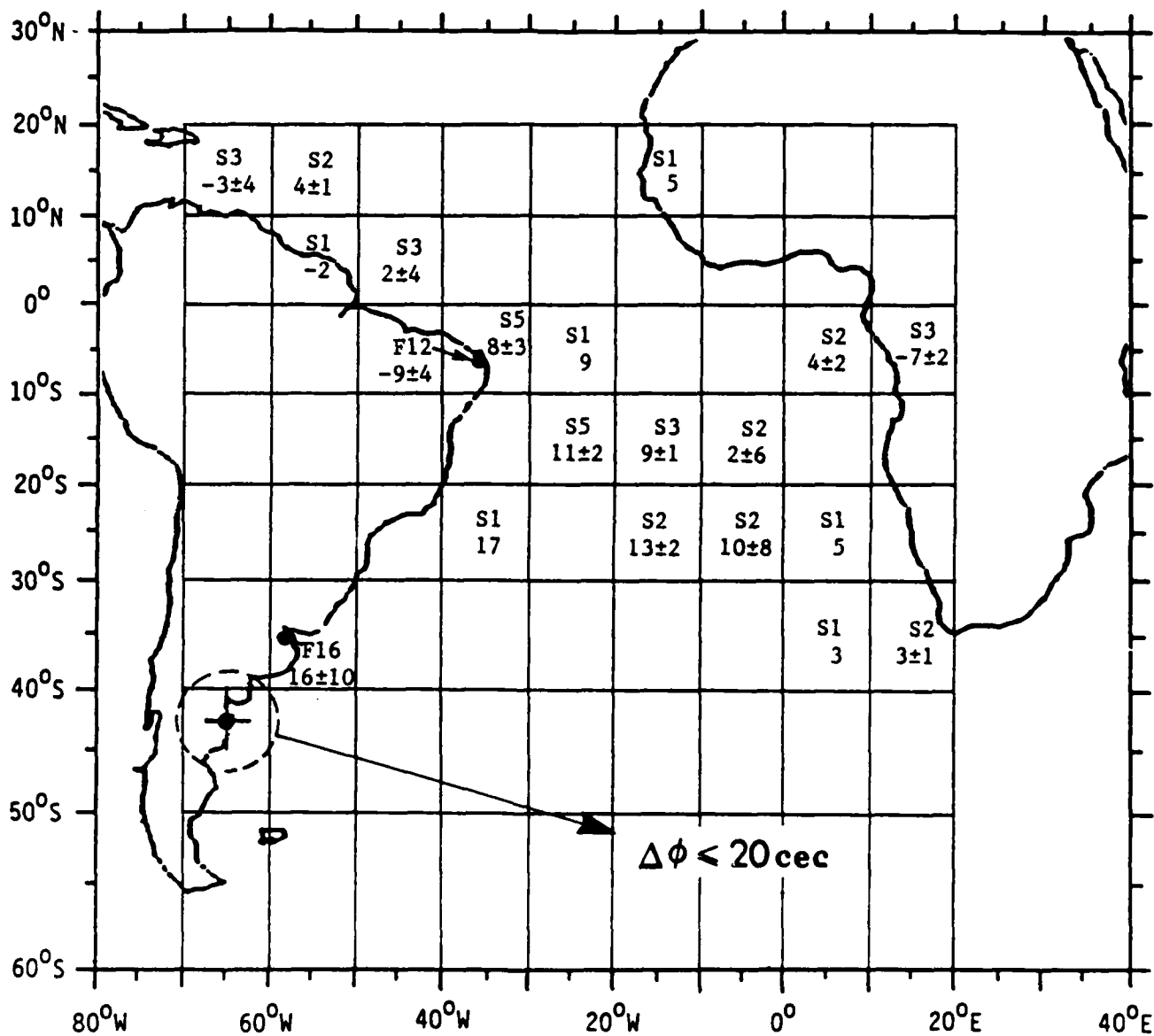


NIGHT PATH

ARGENTINA (F)

MAY

18:00 GMT

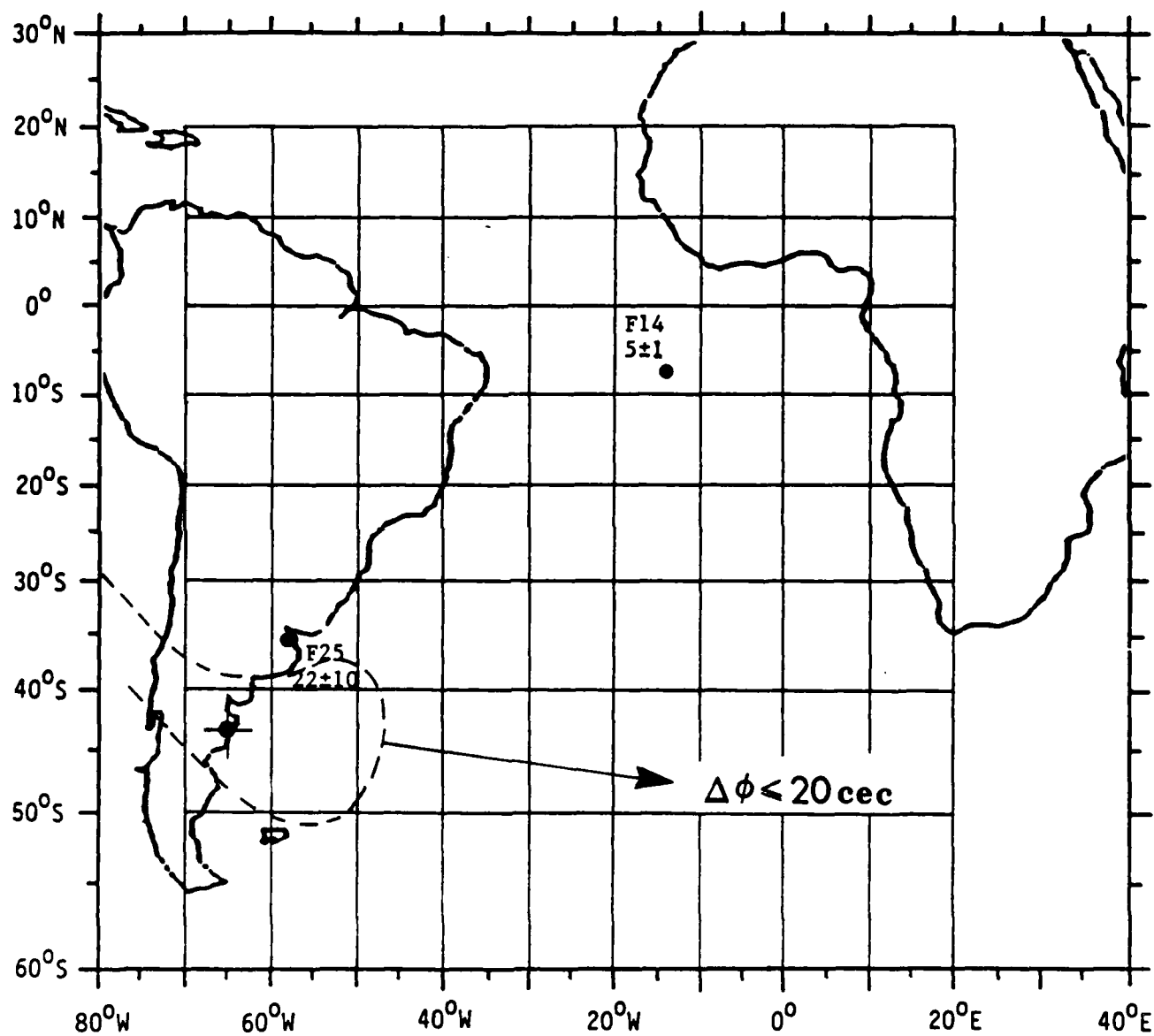


DAY PATH

ARGENTINA (F)

AUGUST

06:00 GMT

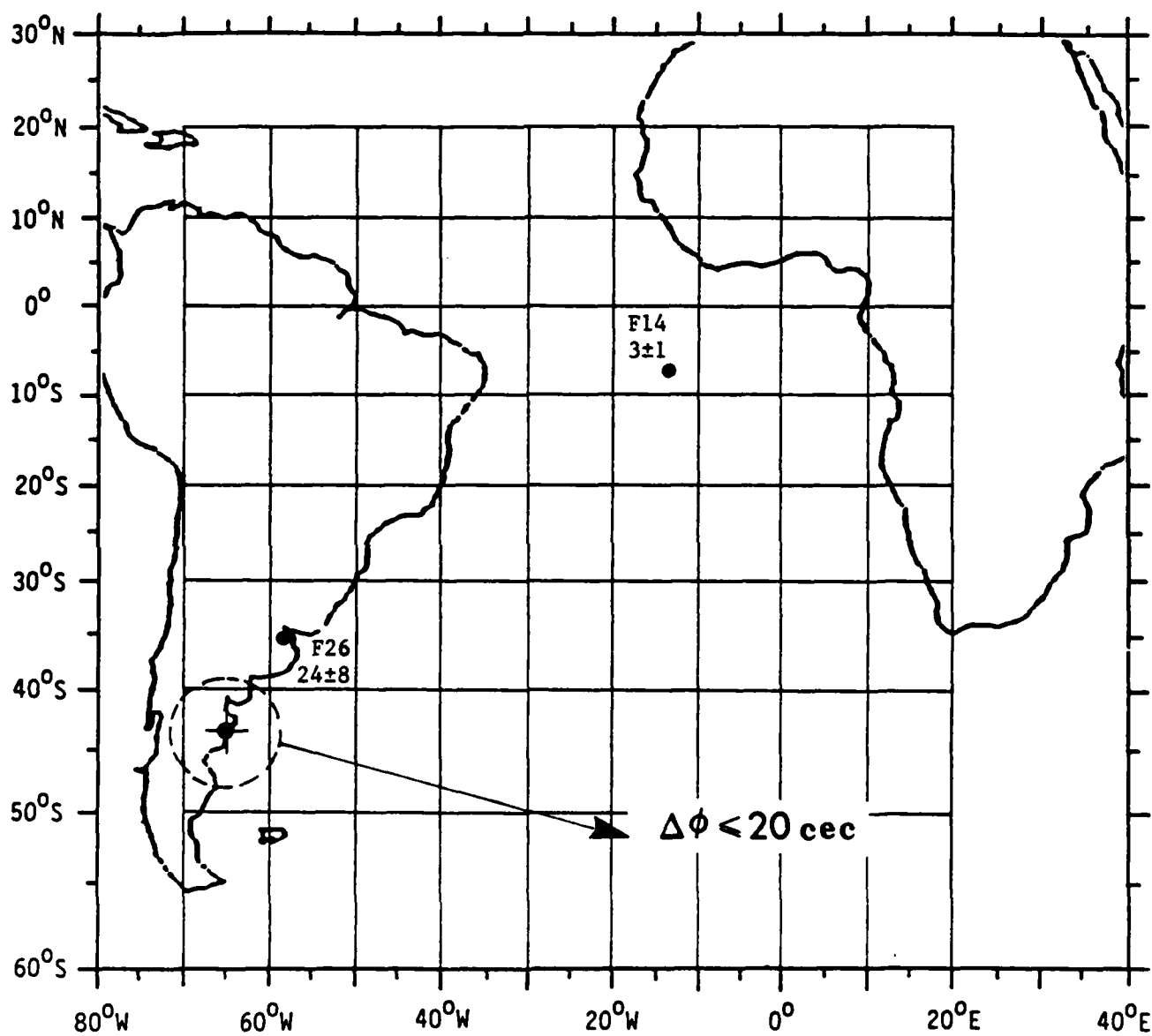


NIGHT PATH

ARGENTINA (F)

AUGUST

18:00 GMT

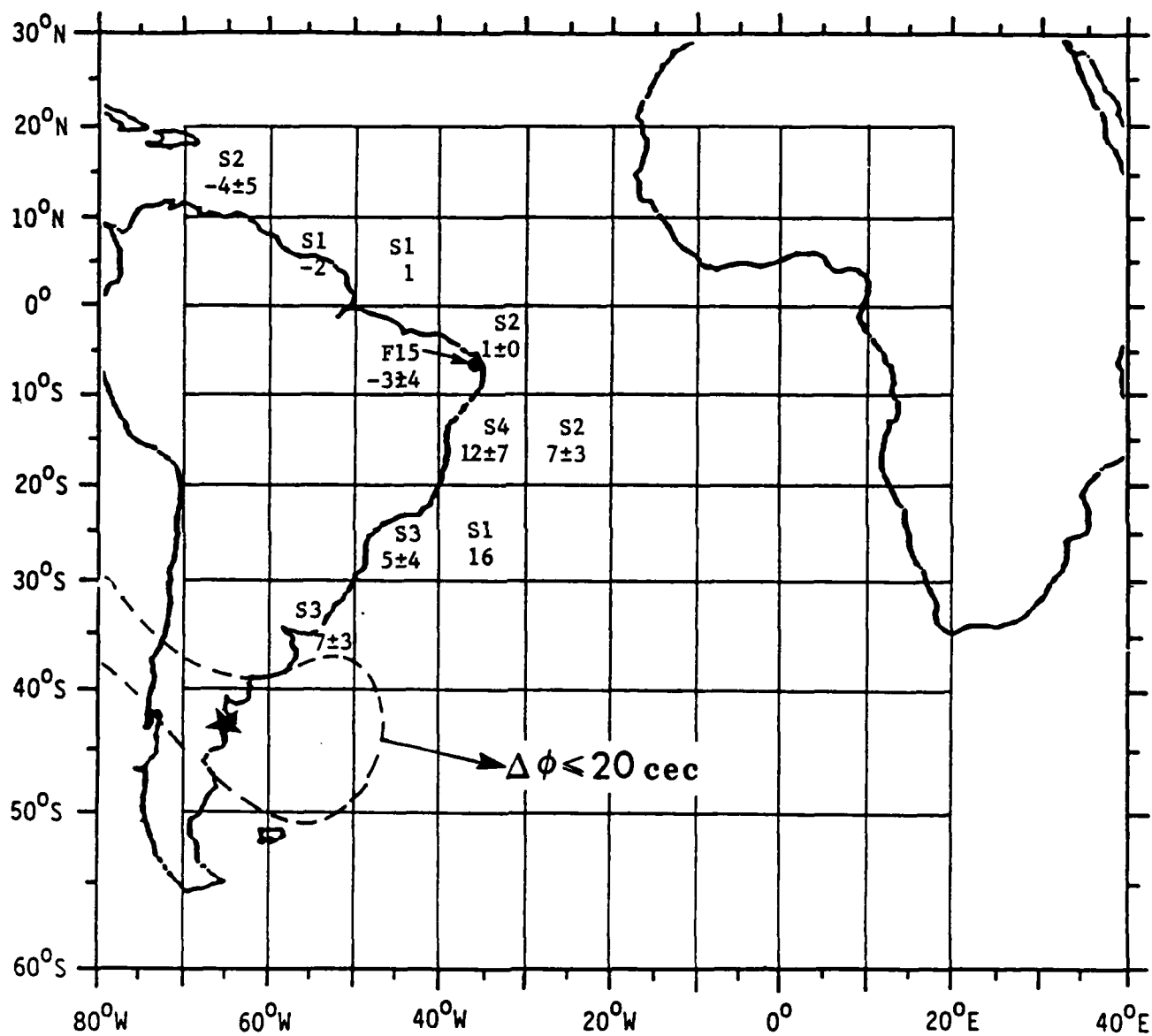


DAY PATH

ARGENTINA (F)

NOVEMBER

06:00 GMT

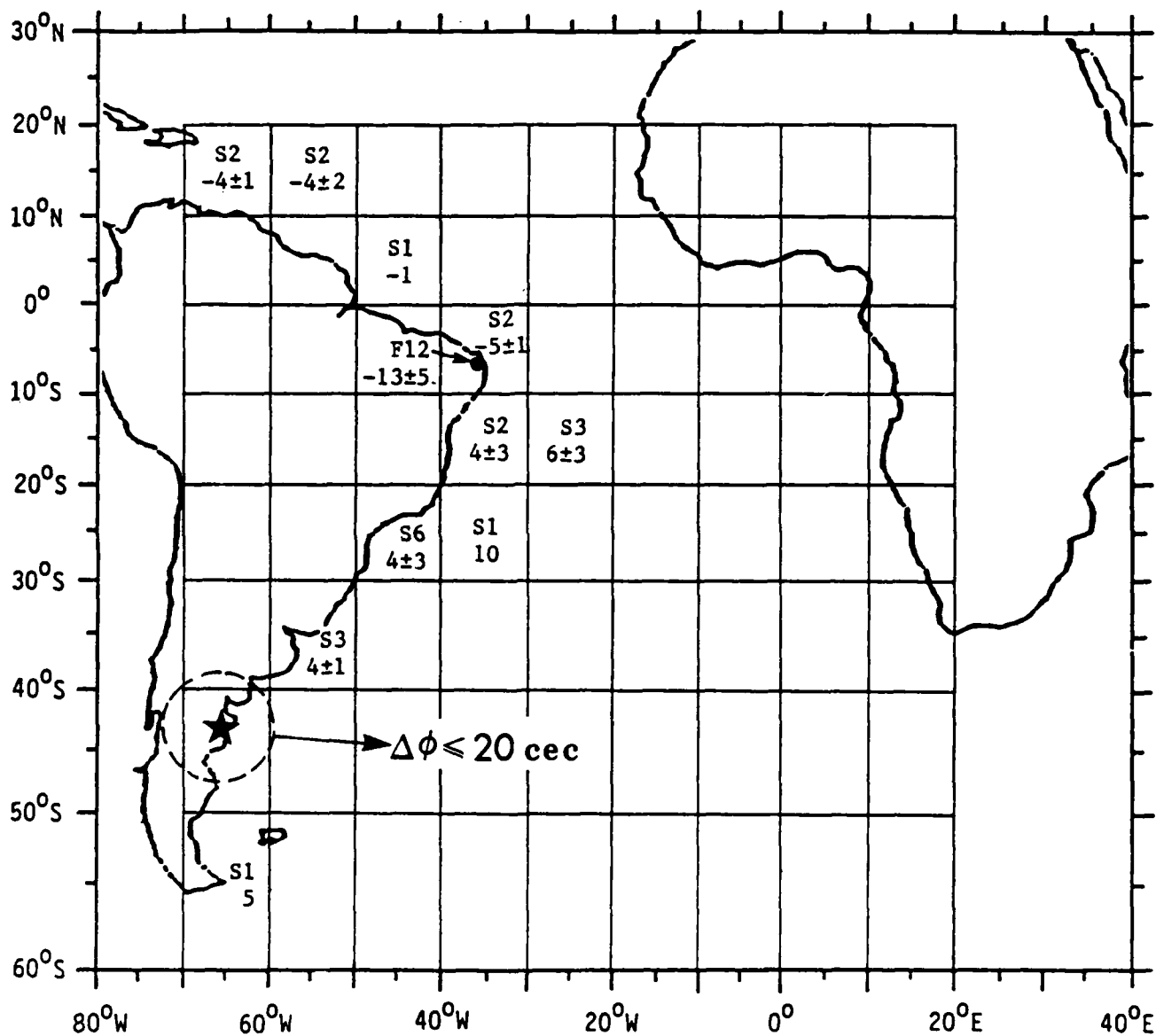


NIGHT PATH

ARGENTINA (F)

NOVEMBER

18:00 GMT

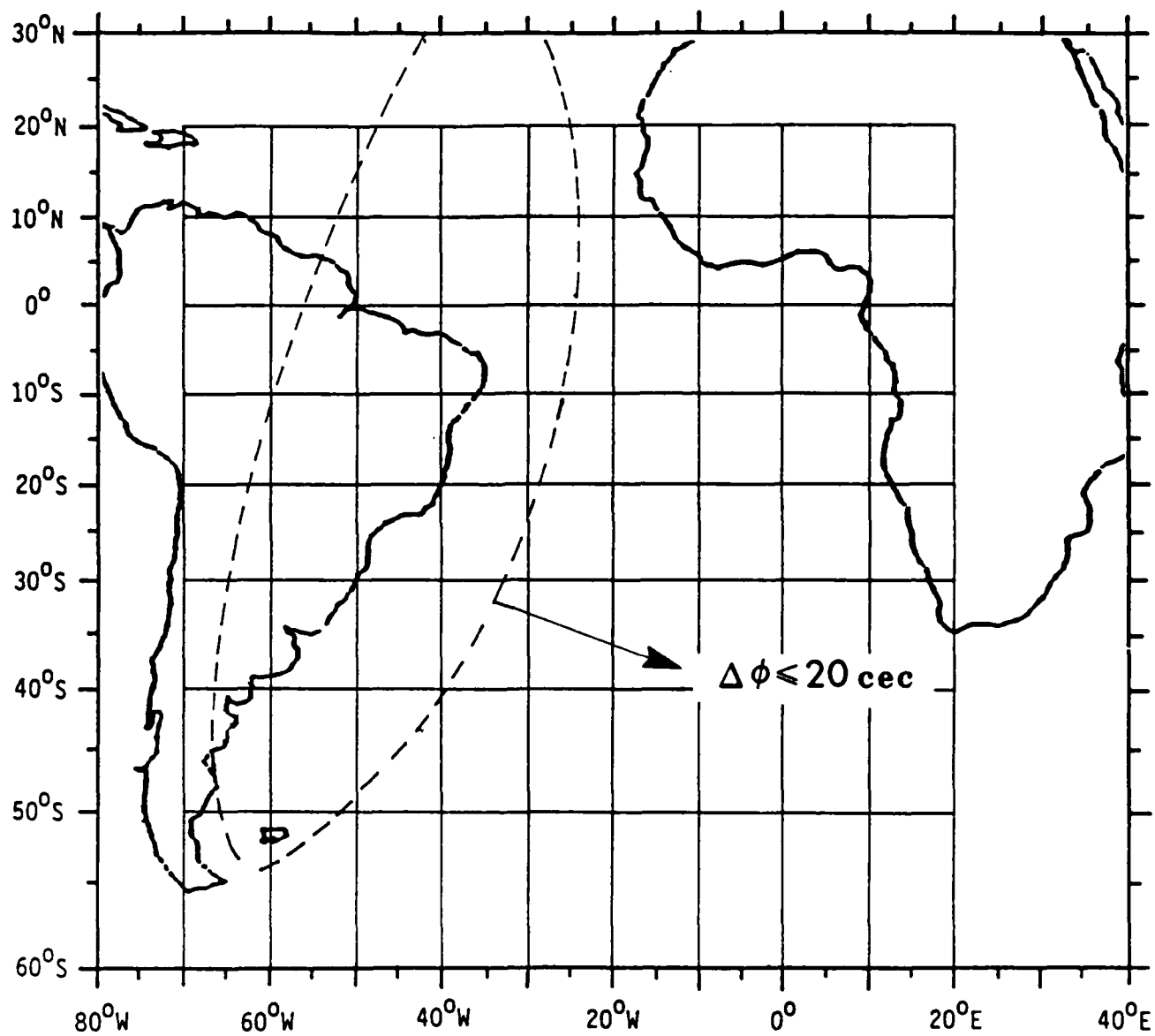


DAY PATH

AUSTRALIA (G)

FEBRUARY

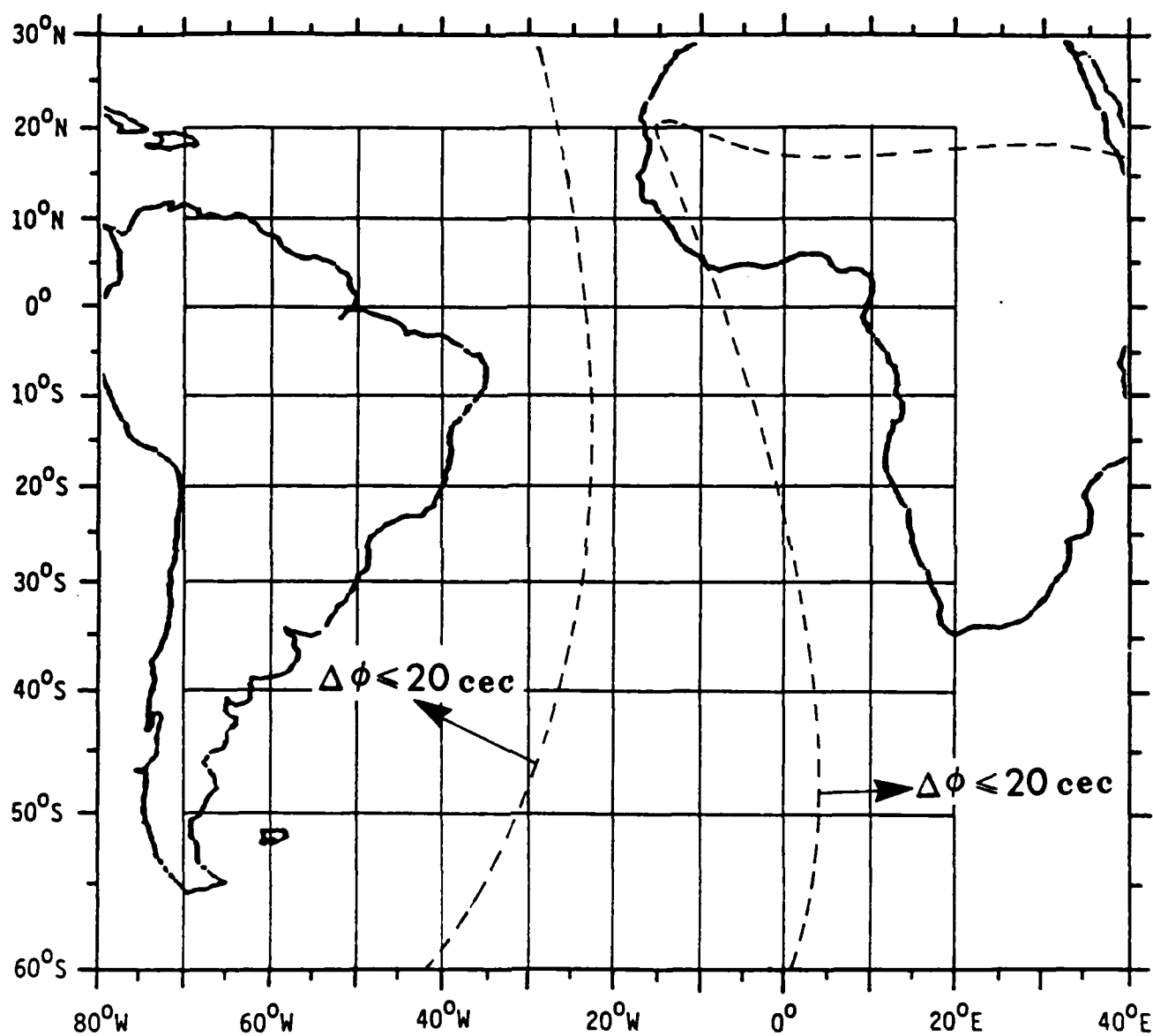
06:00 GMT



AUSTRALIA (G)

FEBRUARY

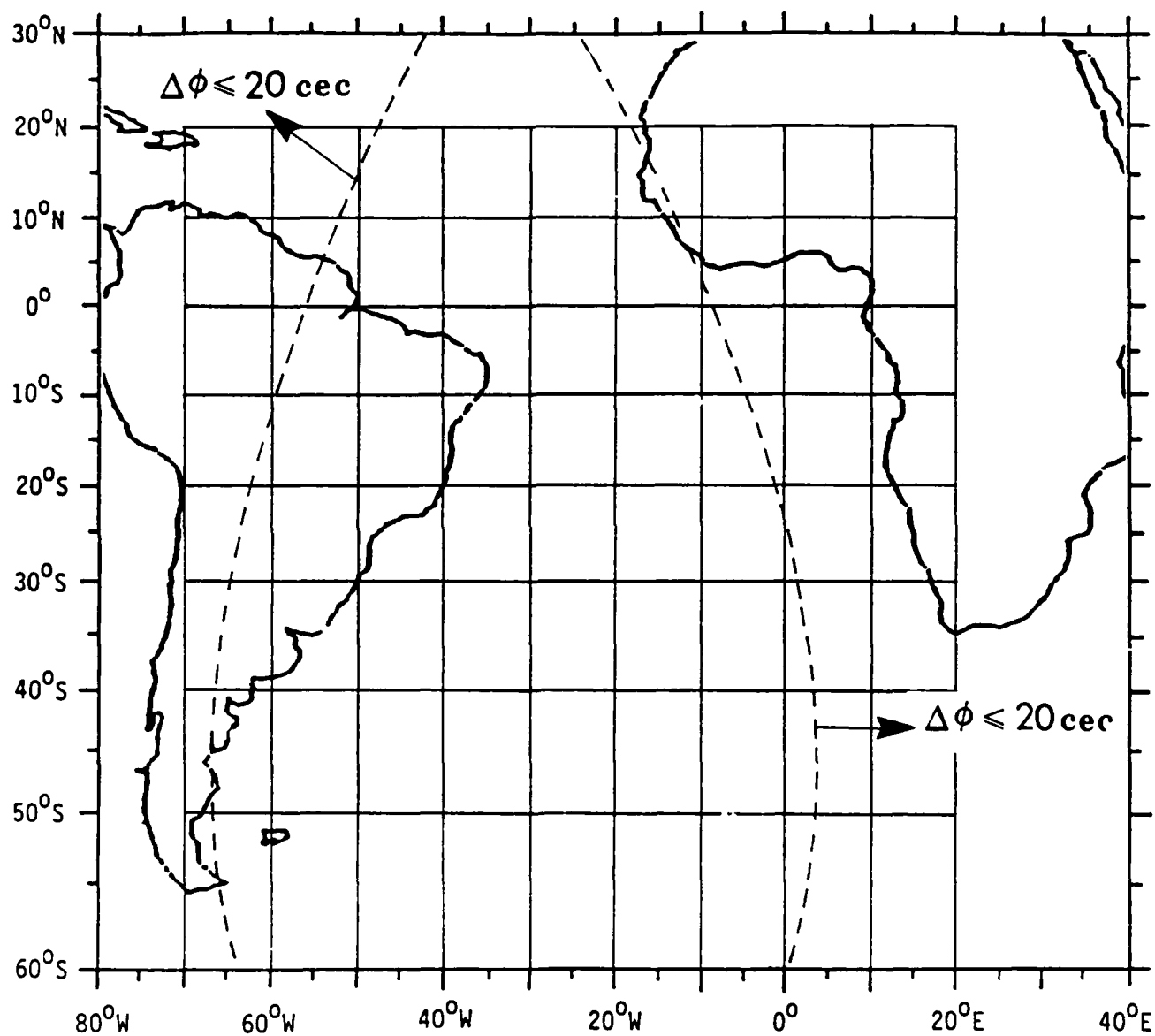
18:00 GMT



AUSTRALIA (G)

MAY

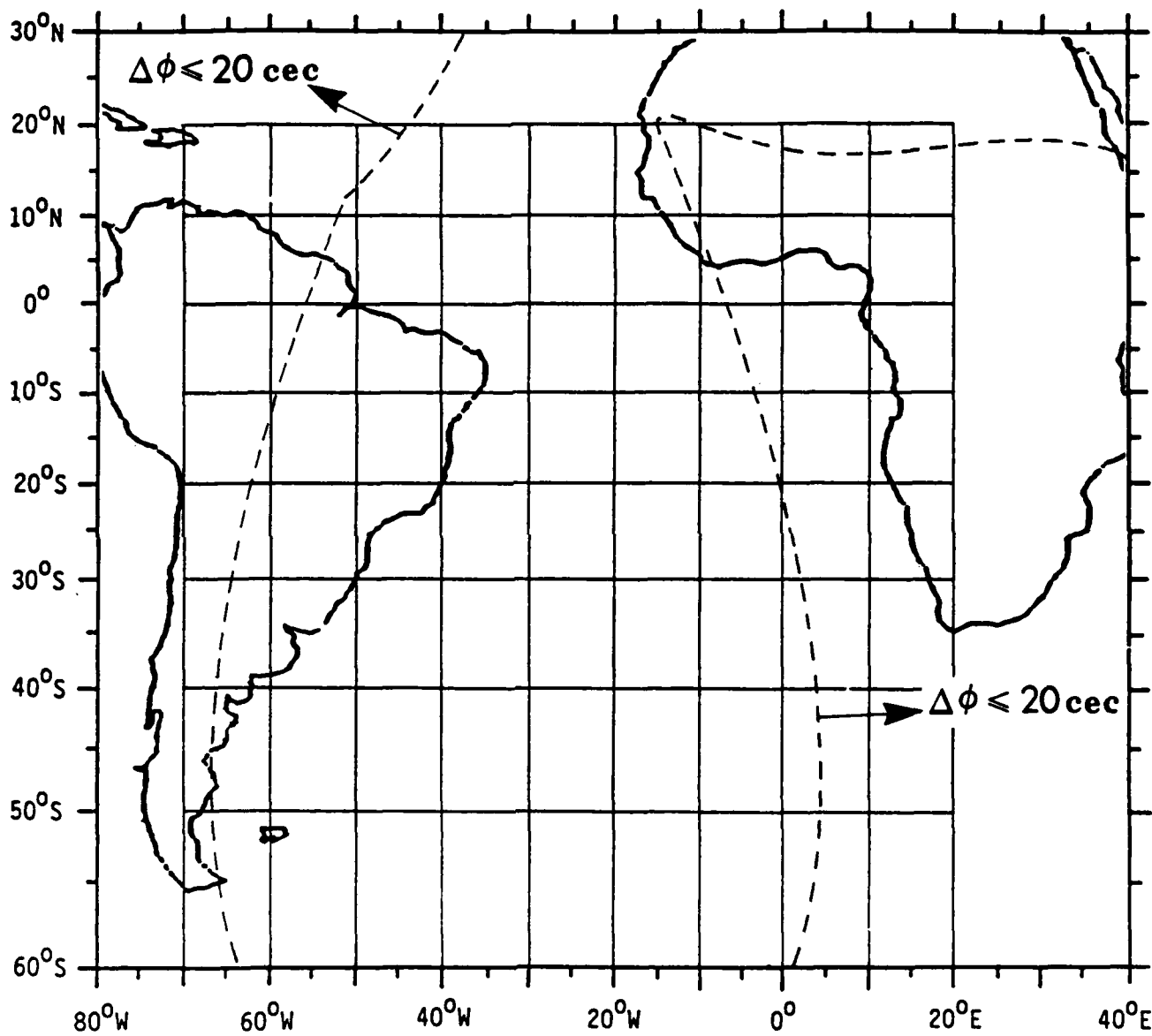
06:00 GMT



AUSTRALIA (G)

MAY

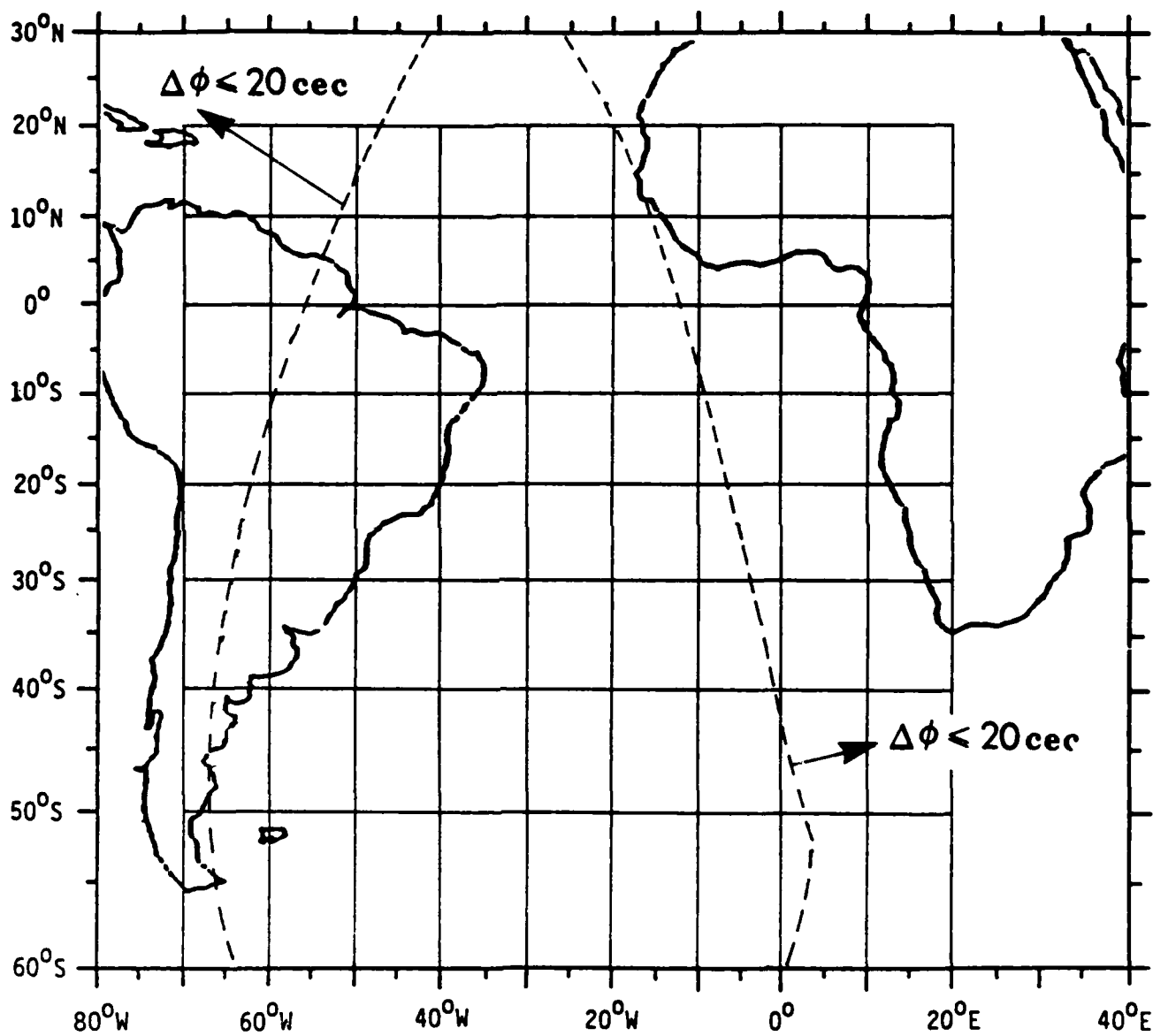
18:00 GMT



AUSTRALIA (G)

AUGUST

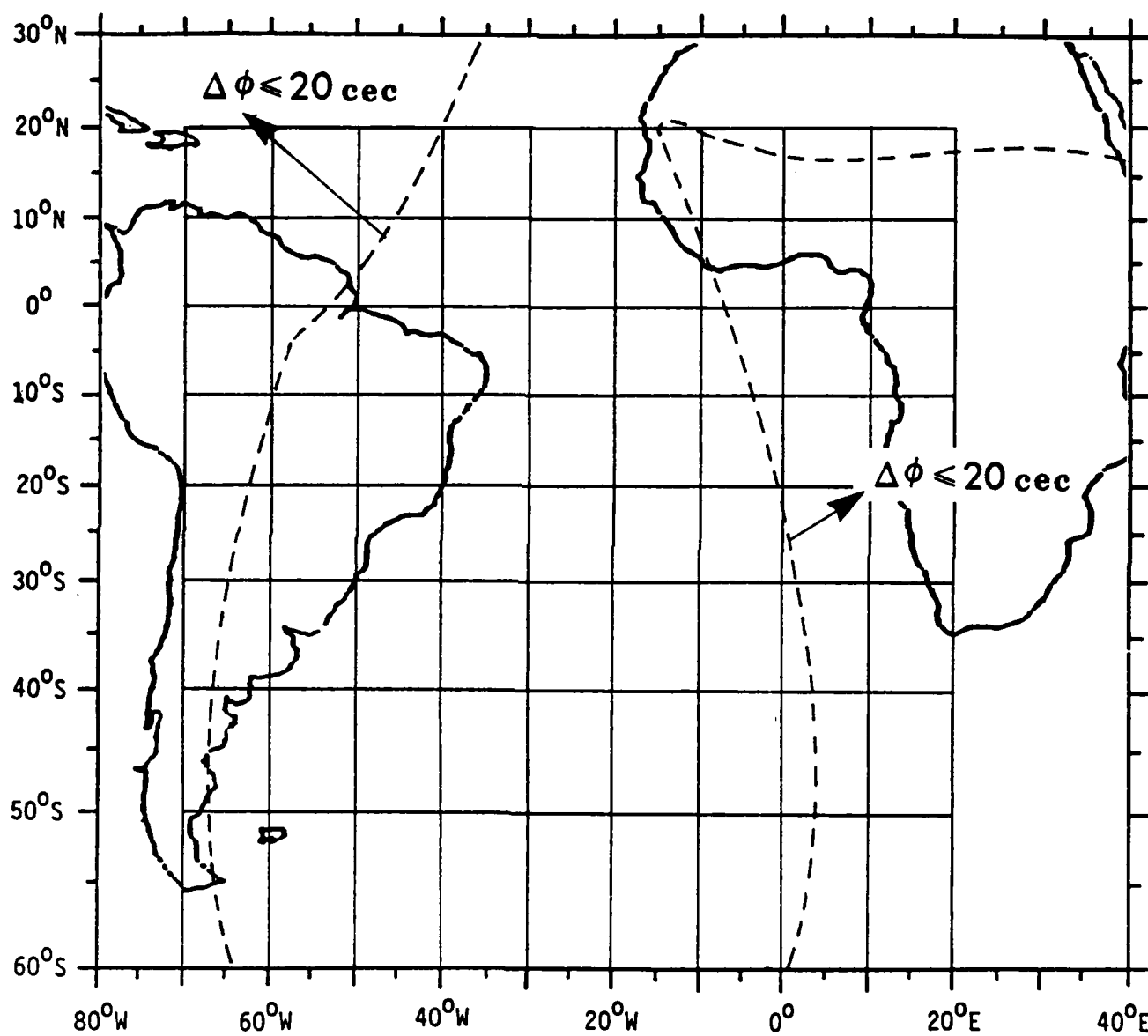
06:00 GMT



AUSTRALIA (G)

AUGUST

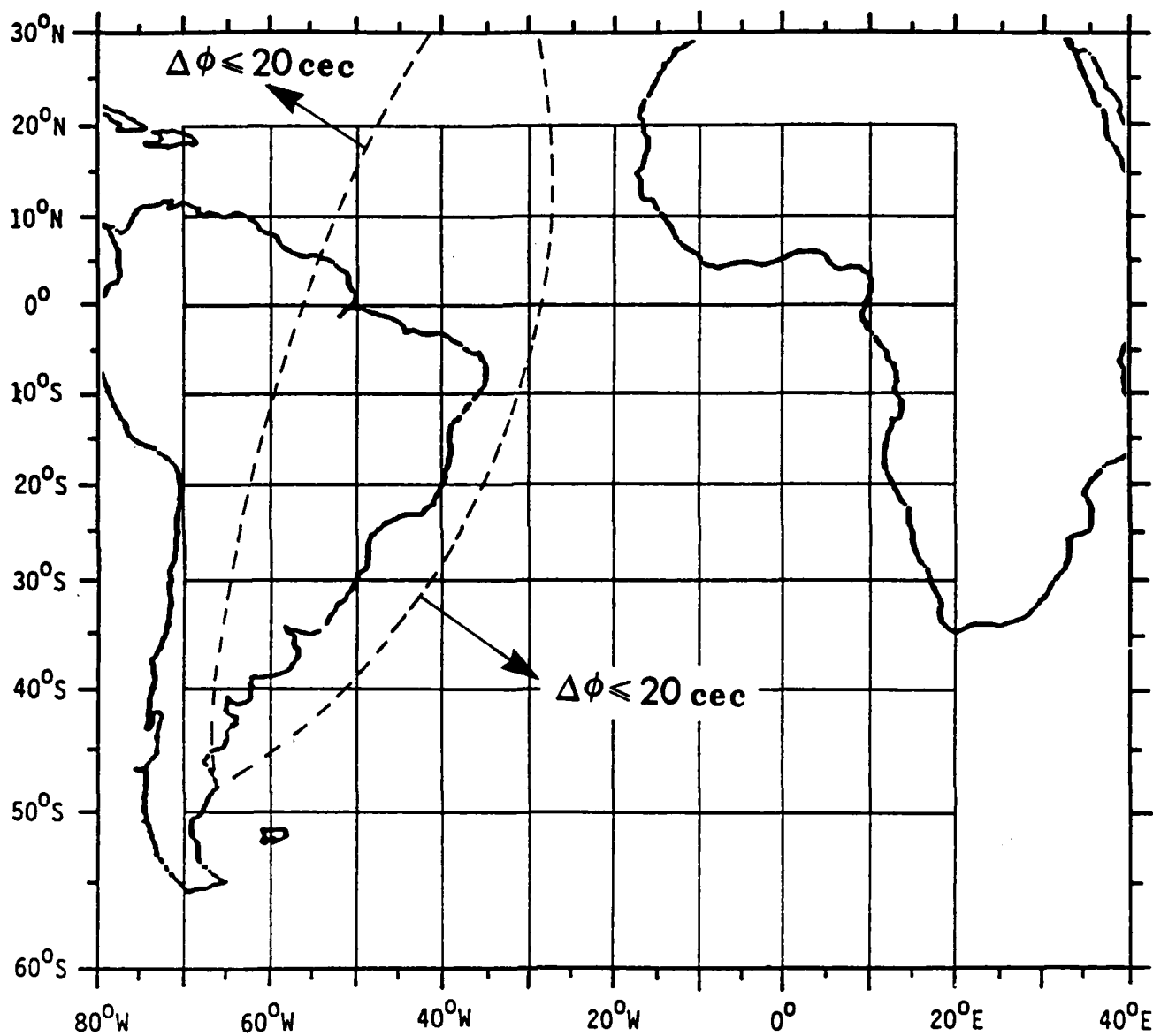
18:00 GMT



AUSTRALIA (G)

NOVEMBER

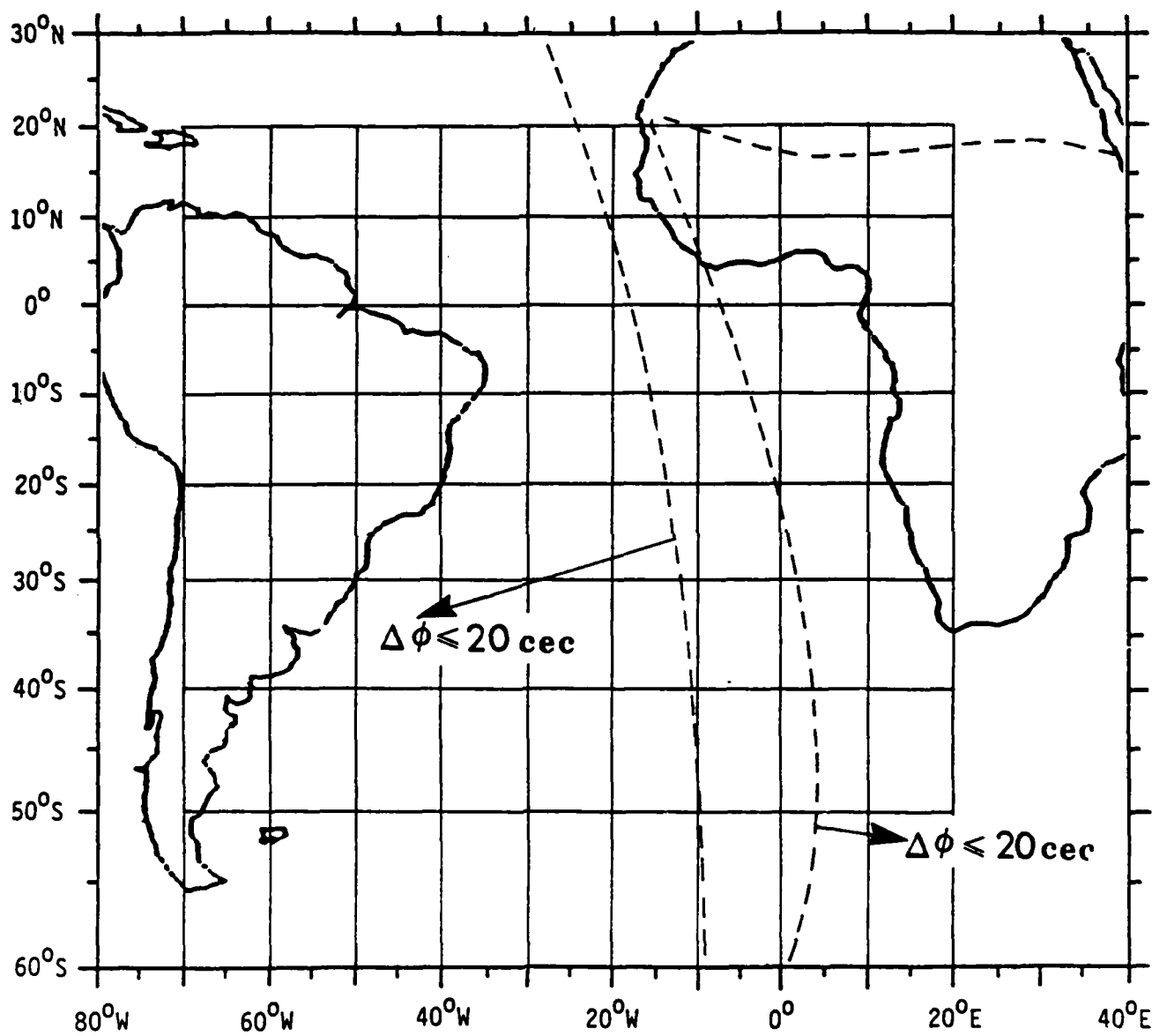
06:00 GMT



AUSTRALIA (G)

NOVEMBER

18:00 GMT

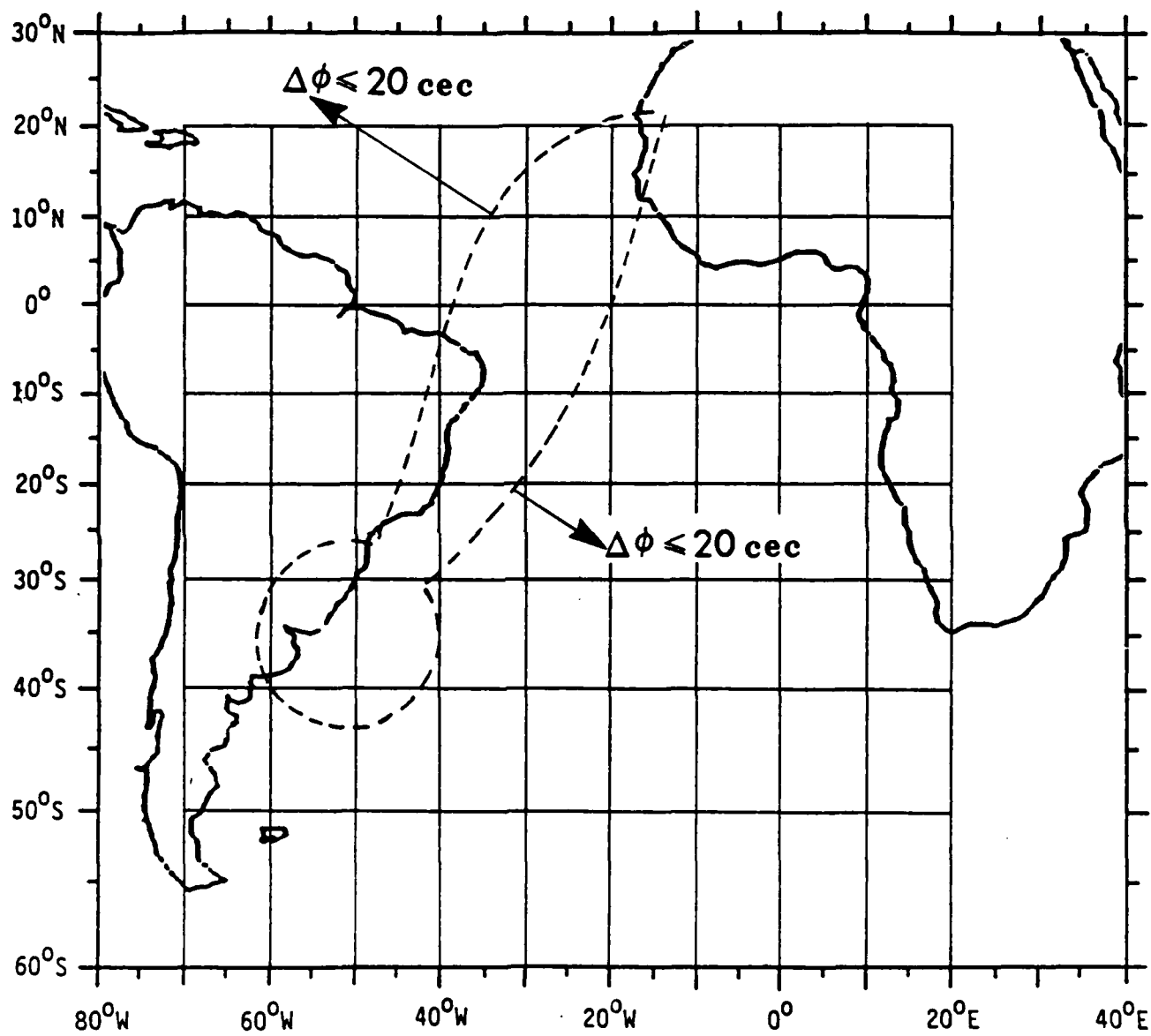


JAPAN

(H)

FEBRUARY

06:00 GMT

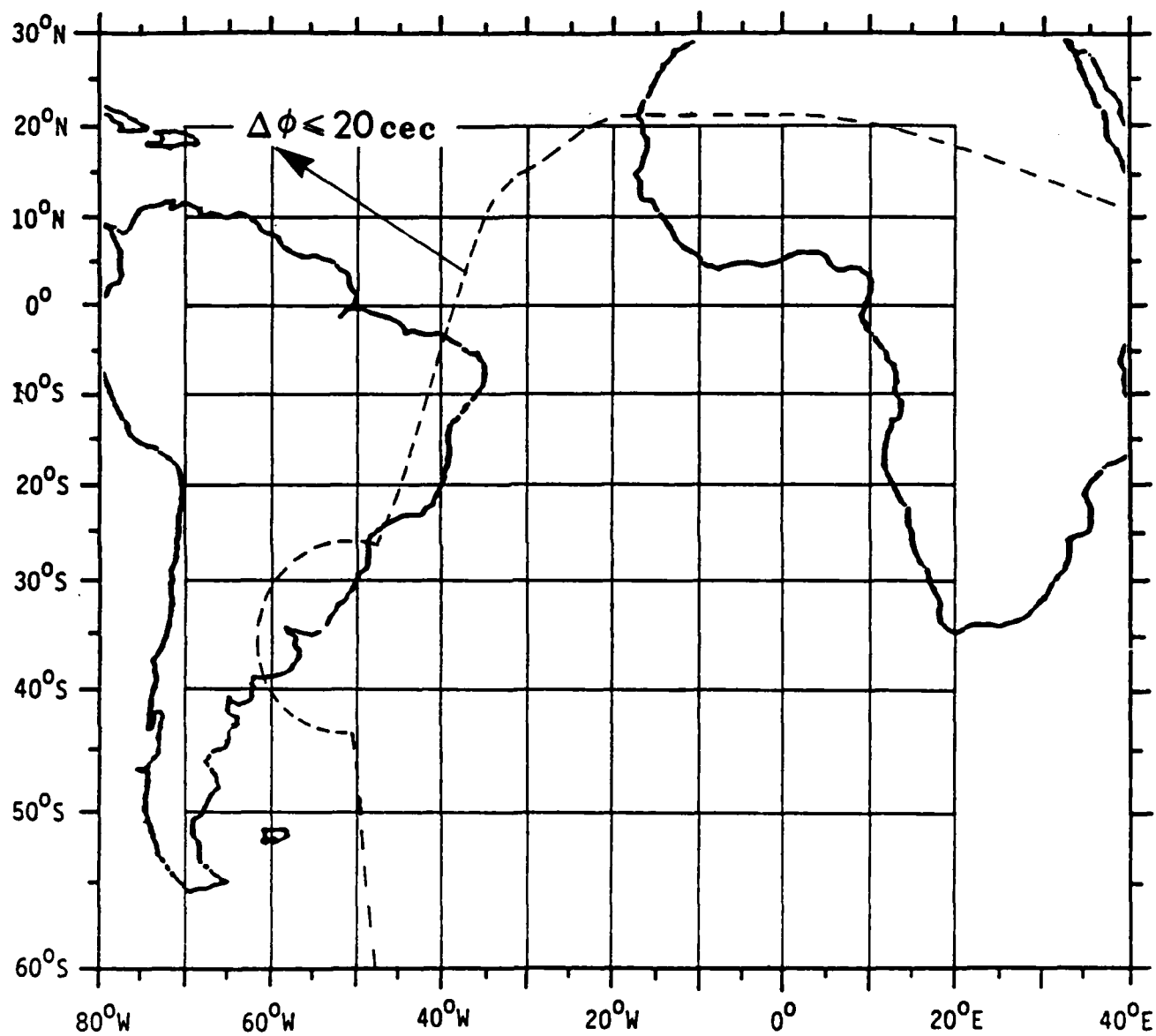


JAPAN

(H)

FEBRUARY

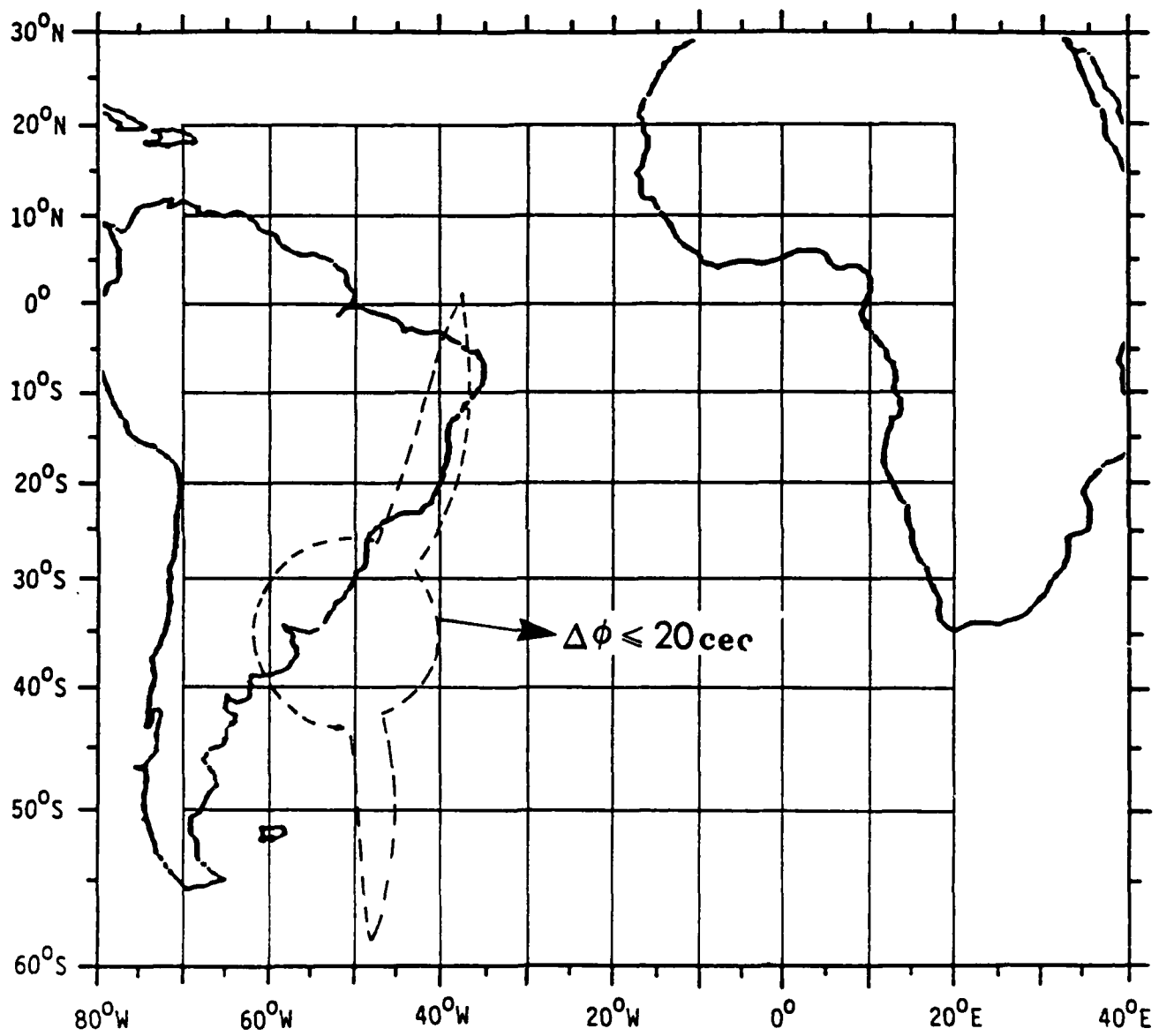
18:00 GMT



JAPAN (H)

MAY

06:00 GMT

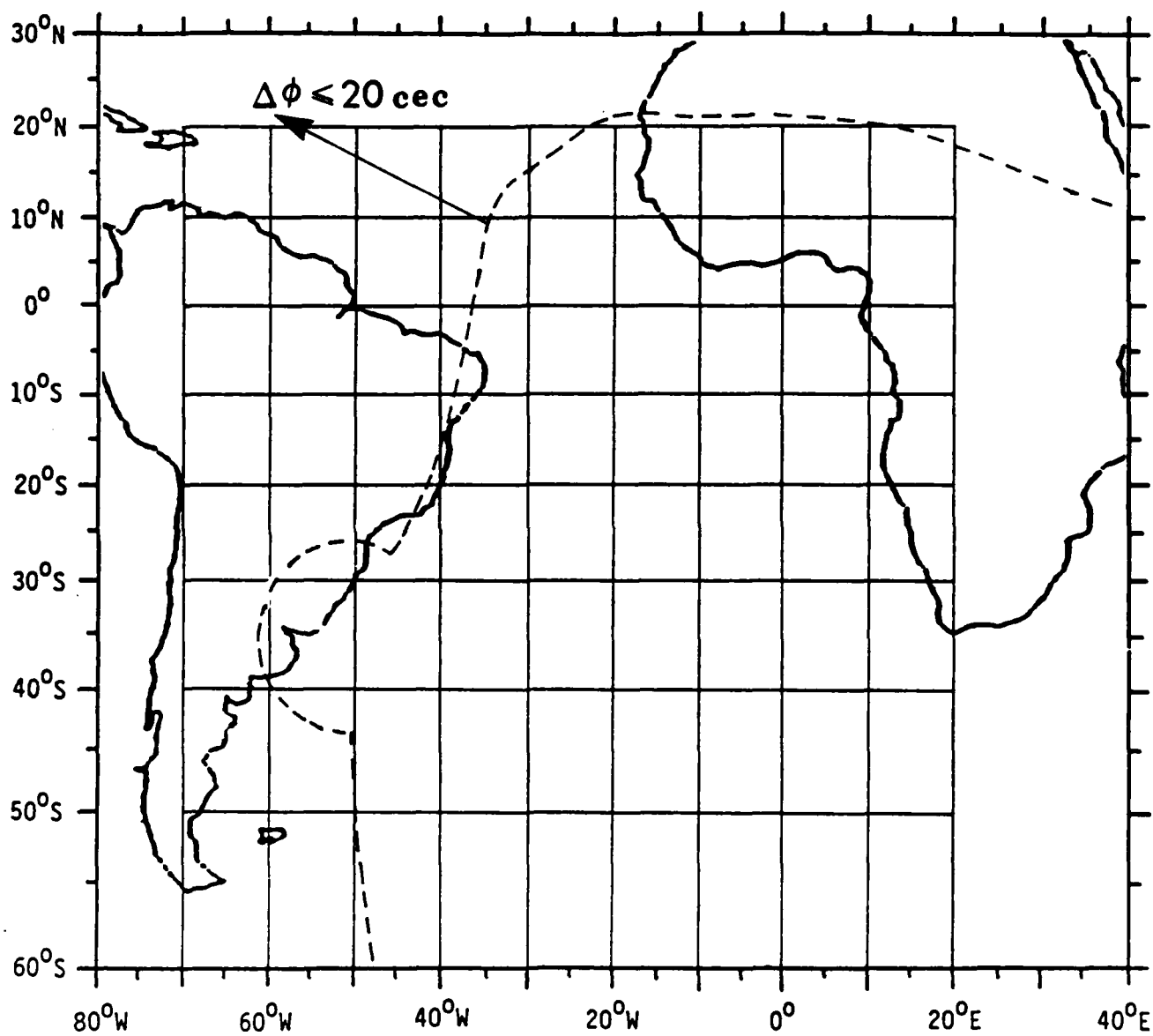


JAPAN

(H)

MAY

18:00 GMT

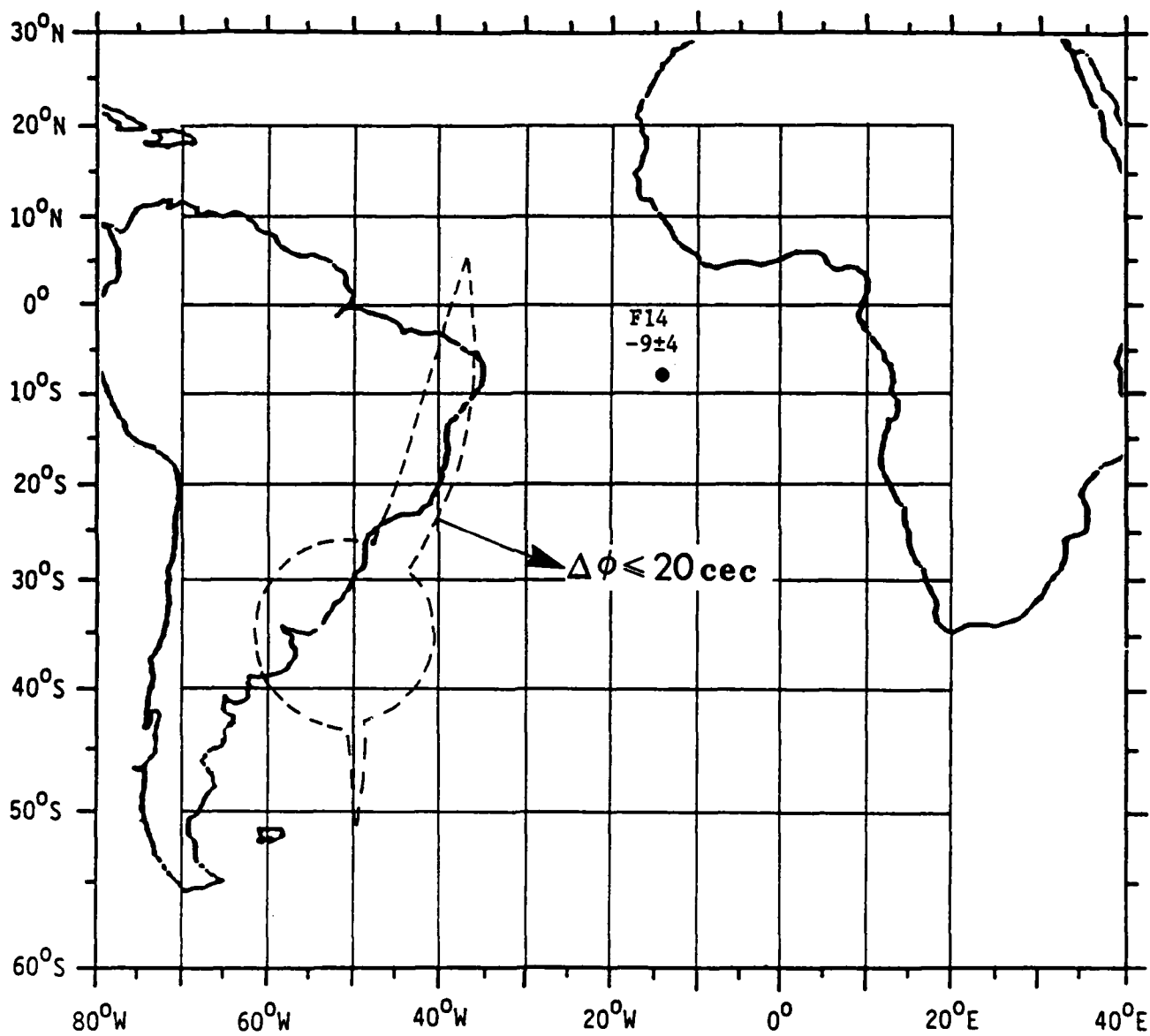


JAPAN

(H)

AUGUST

06:00 GMT



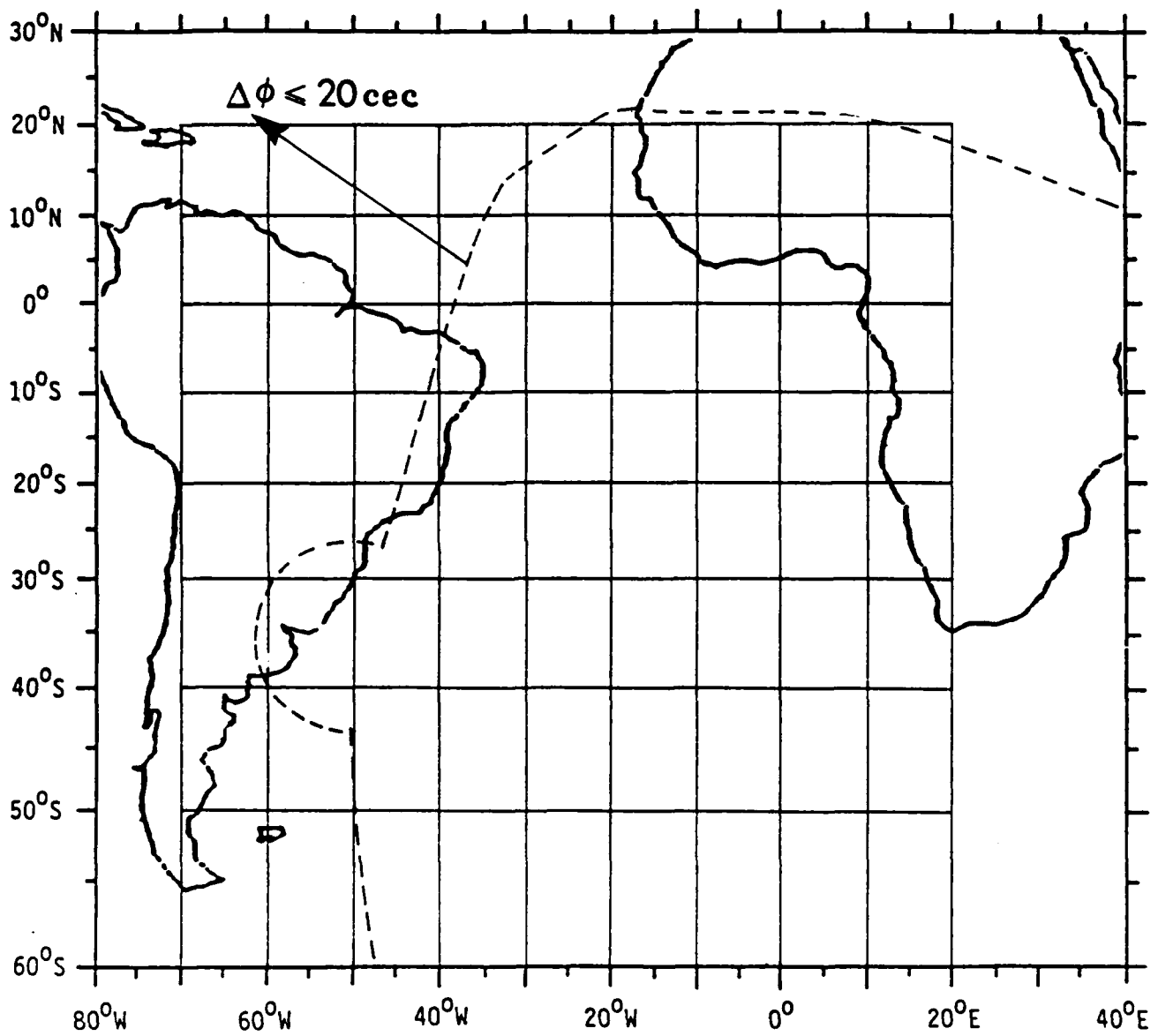
DAY PATH

JAPAN

(H)

AUGUST

18:00 GMT

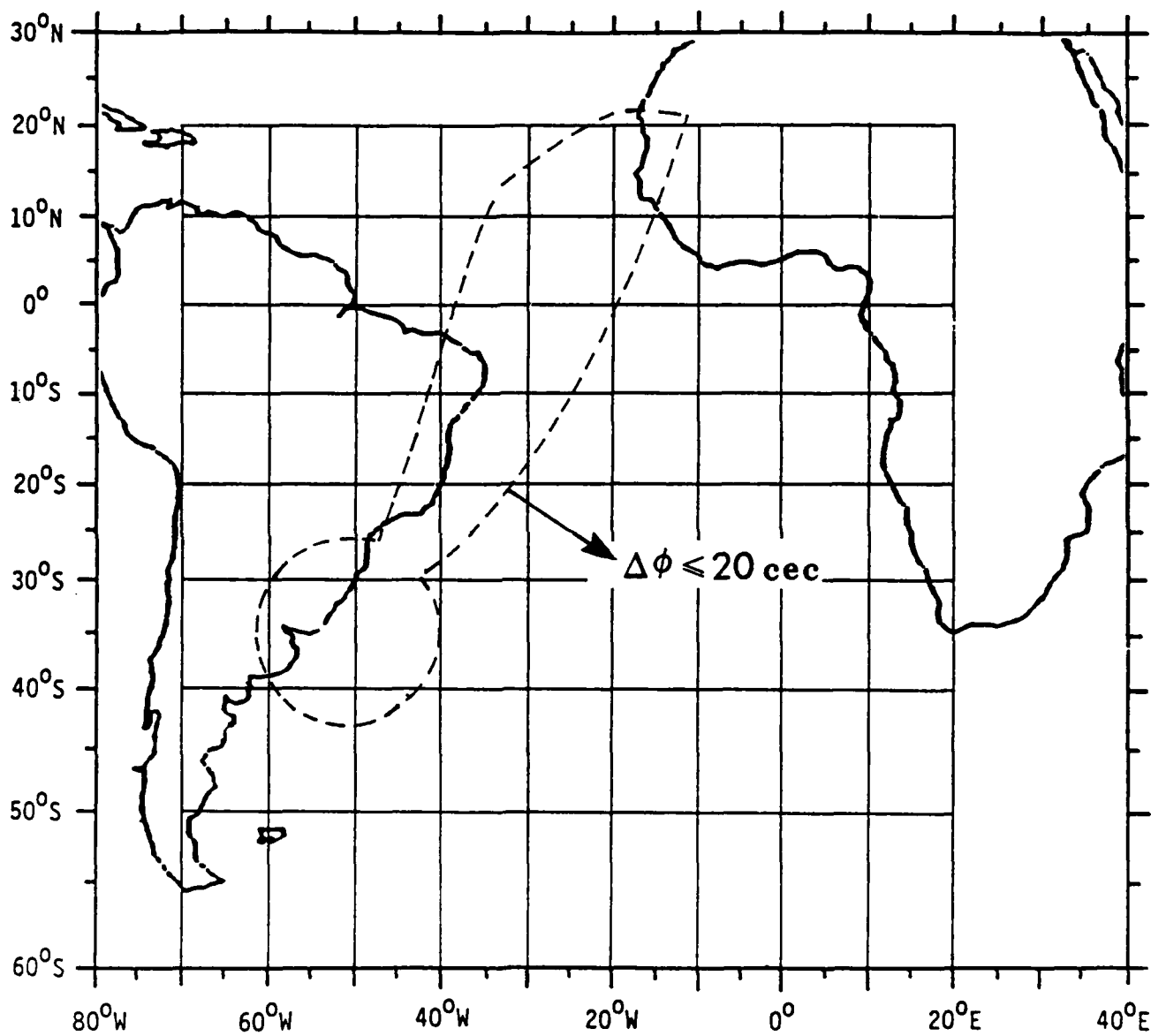


JAPAN

(H)

NOVEMBER

06:00 GMT

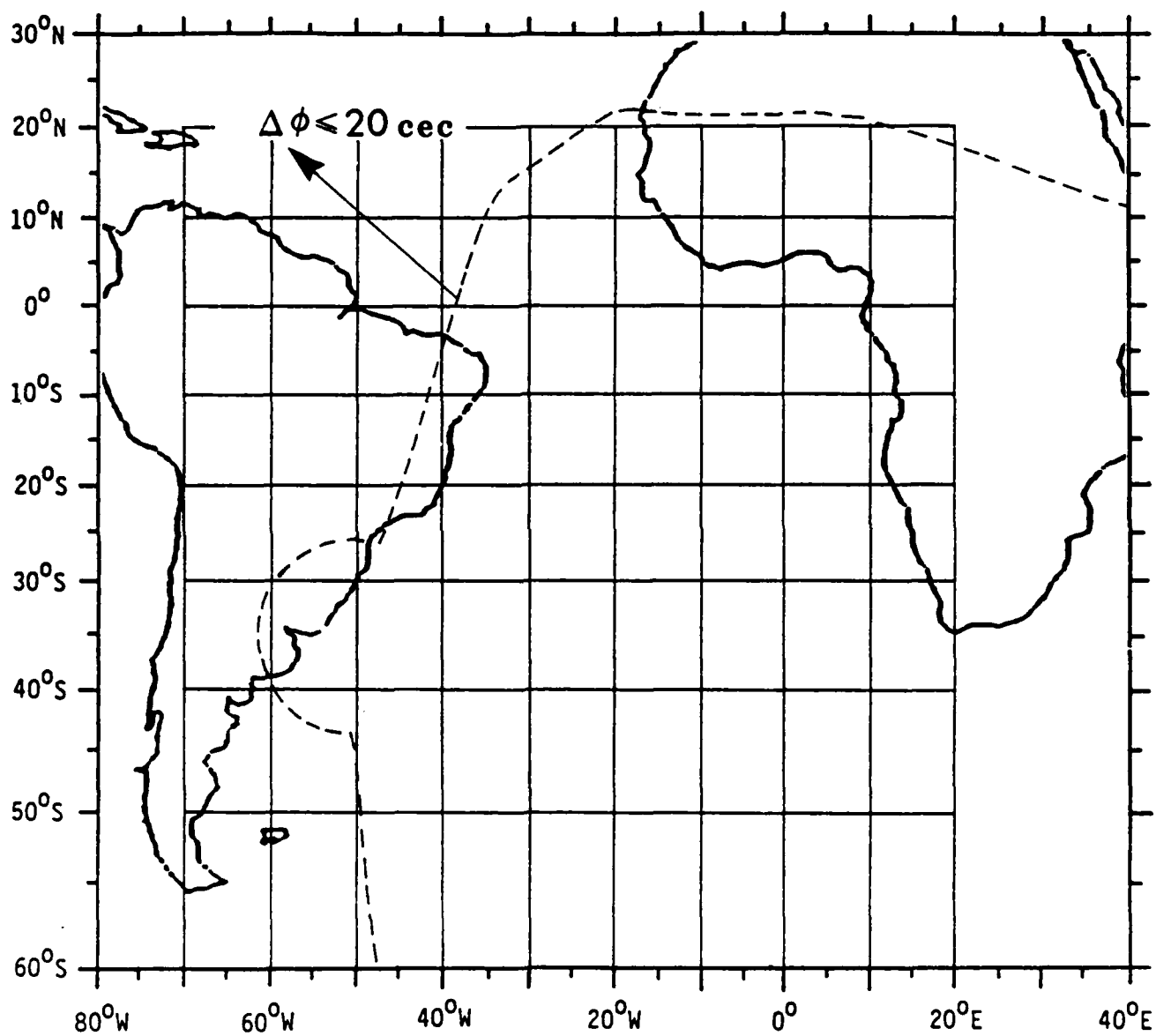


JAPAN

(H)

NOVEMBER

18:00 GMT



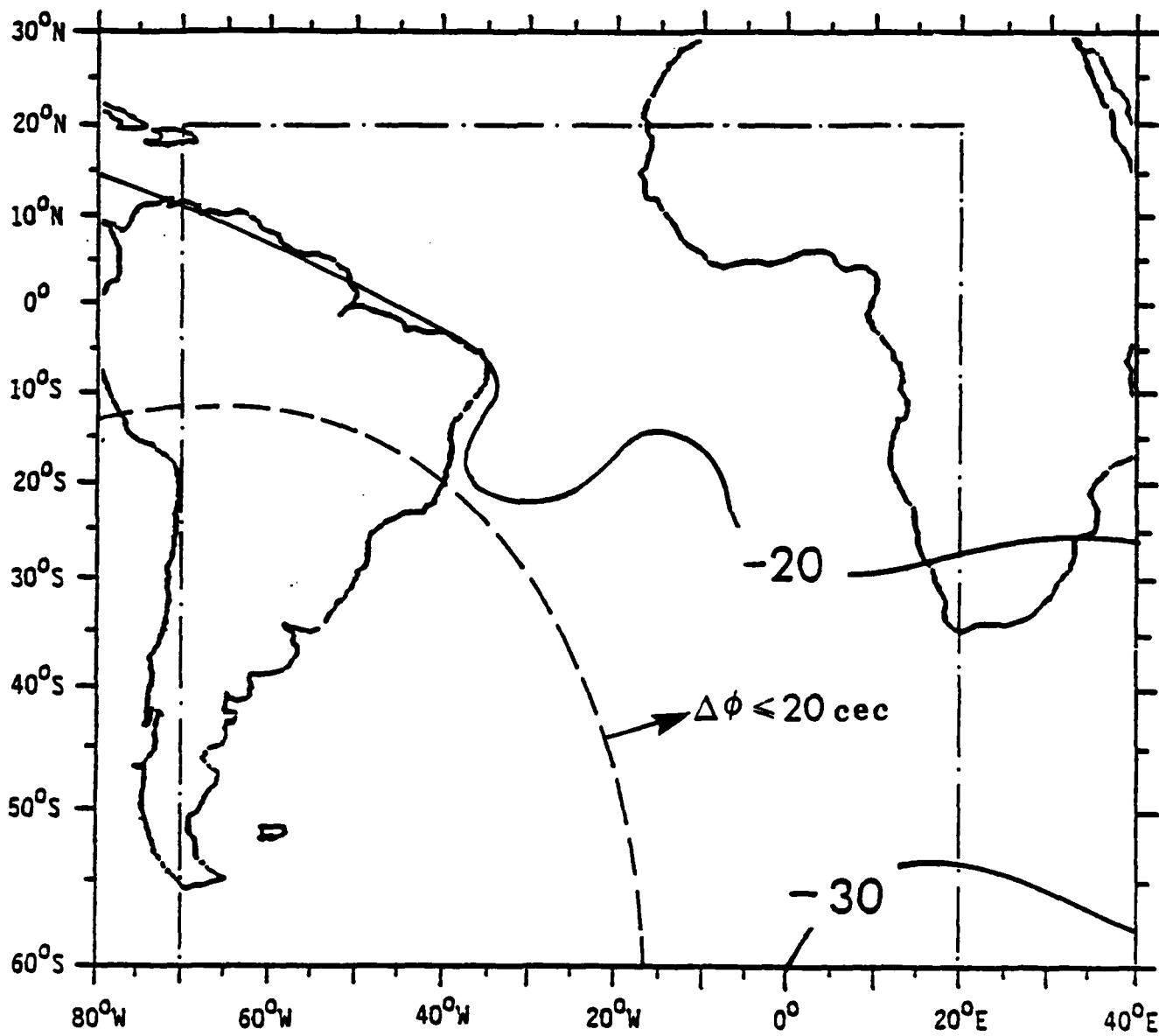
APPENDIX H

MODIFIED PREDICTIONS OF OMEGA SIGNAL COVERAGE AT 10.2 KHZ FOR
SOUTH ATLANTIC REGION

NORWAY (A)

FEBRUARY

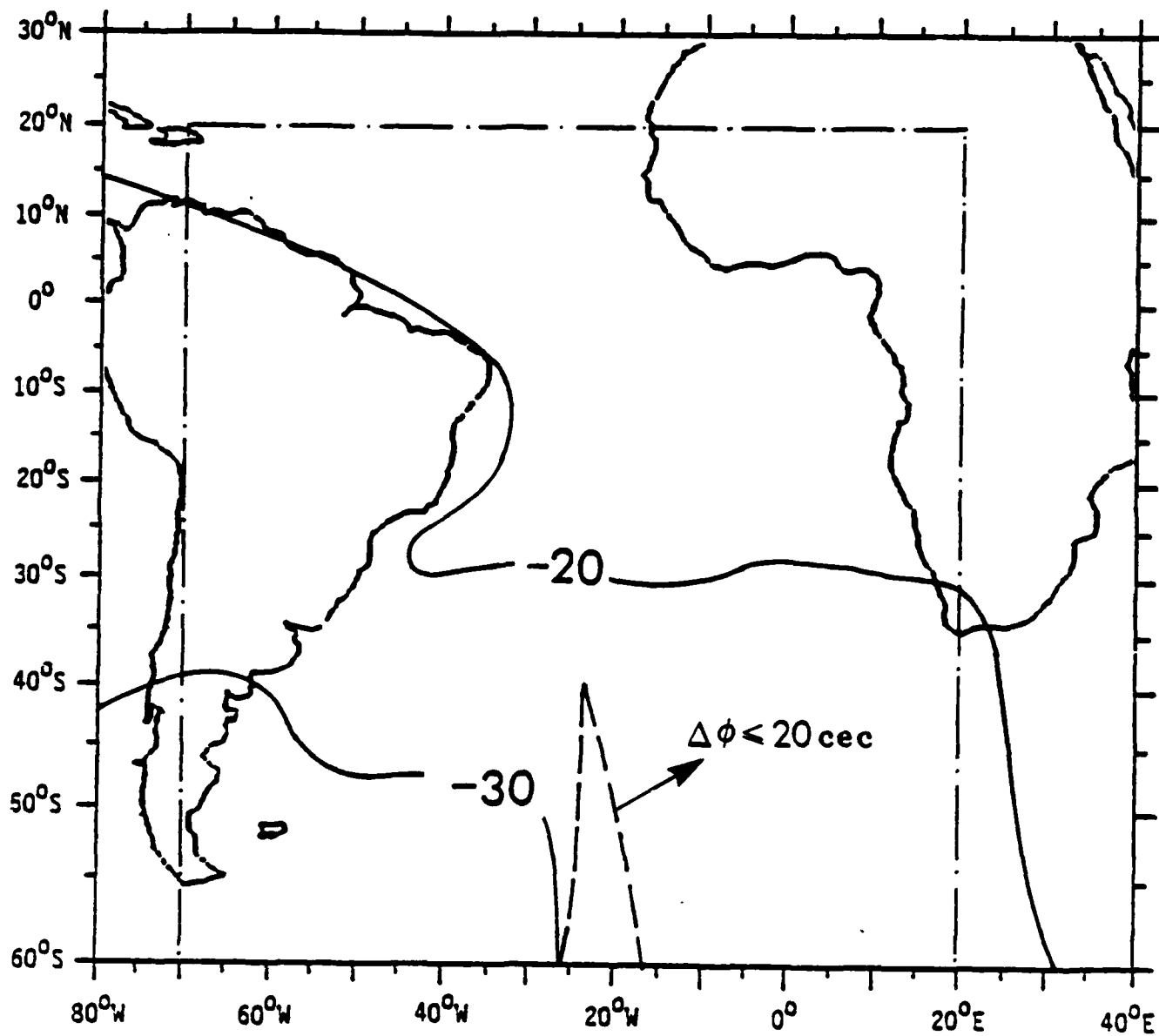
0600 GMT



NORWAY (A)

FEBRUARY

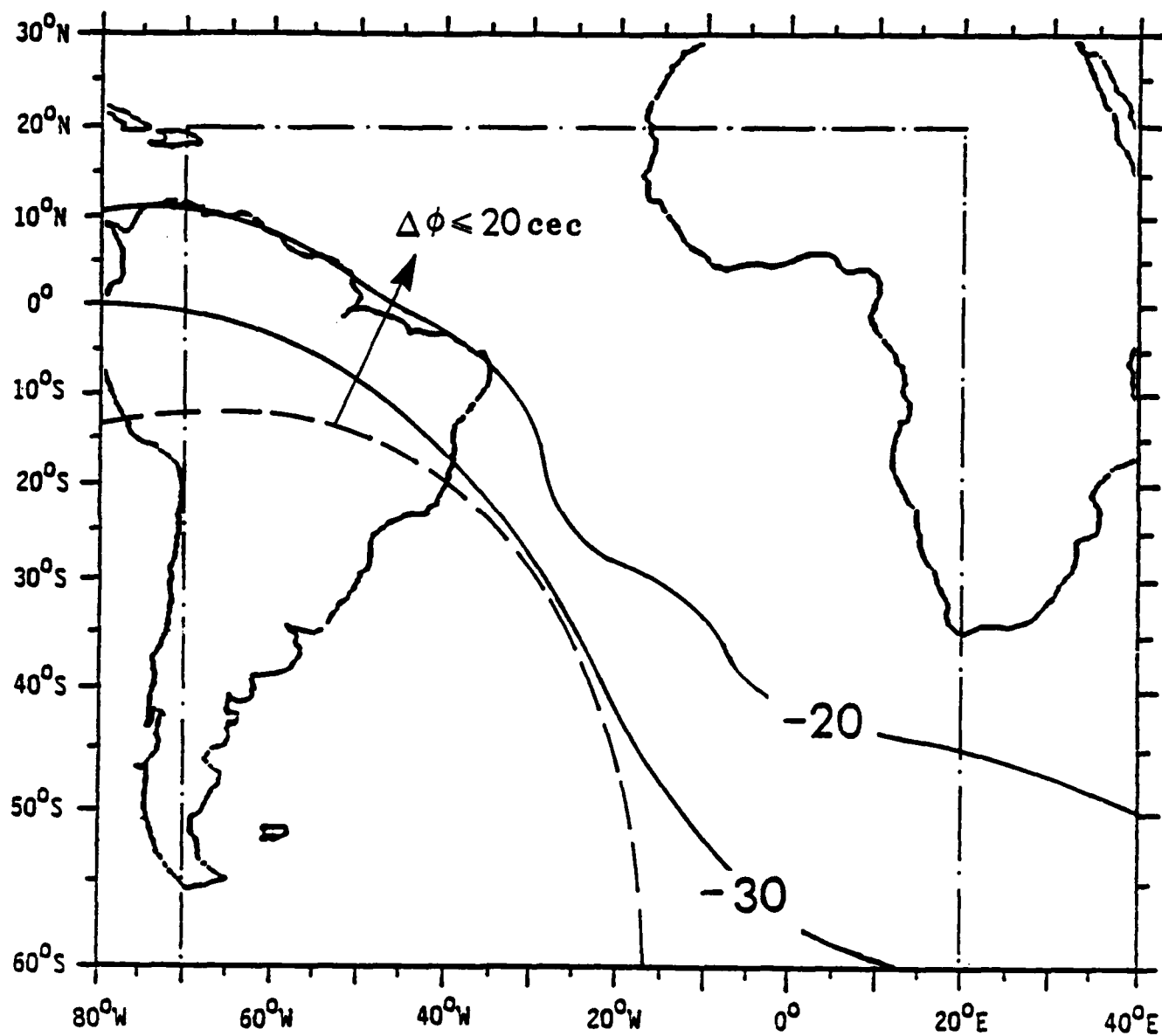
1800 GMT



NORWAY (A)

MAY

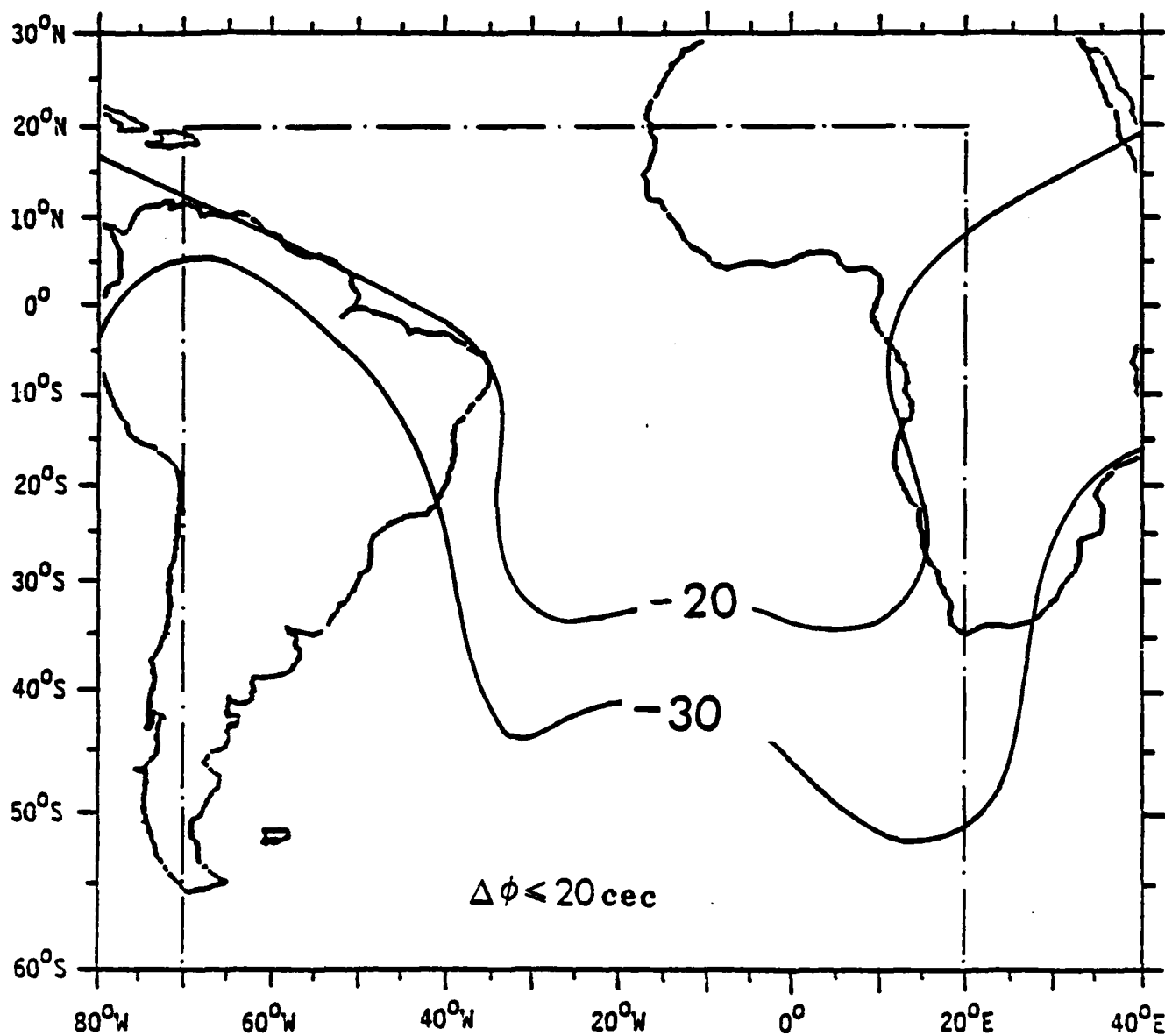
0600 GMT



NORWAY (A)

MAY

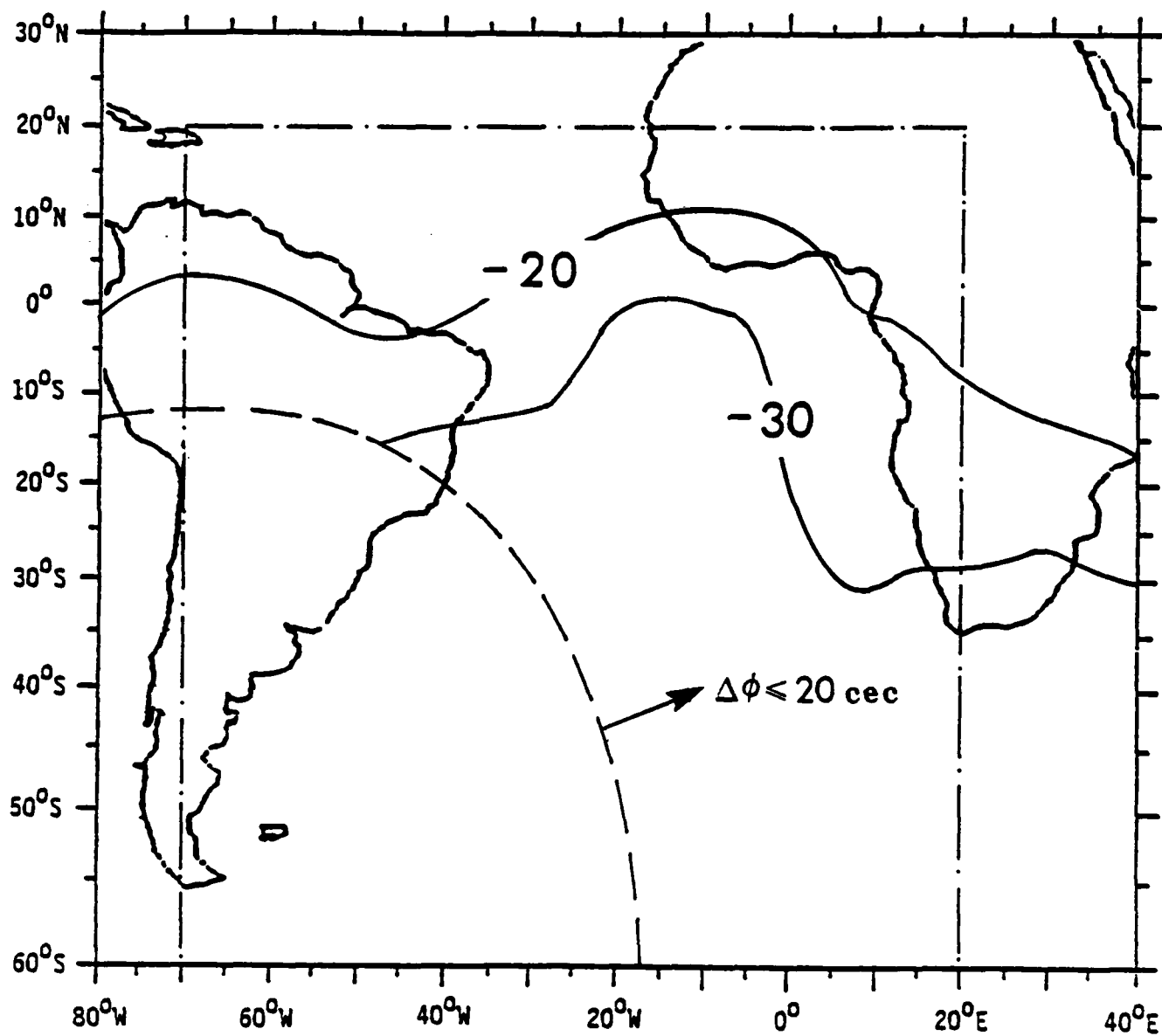
1800 GMT



NORWAY (A)

AUGUST

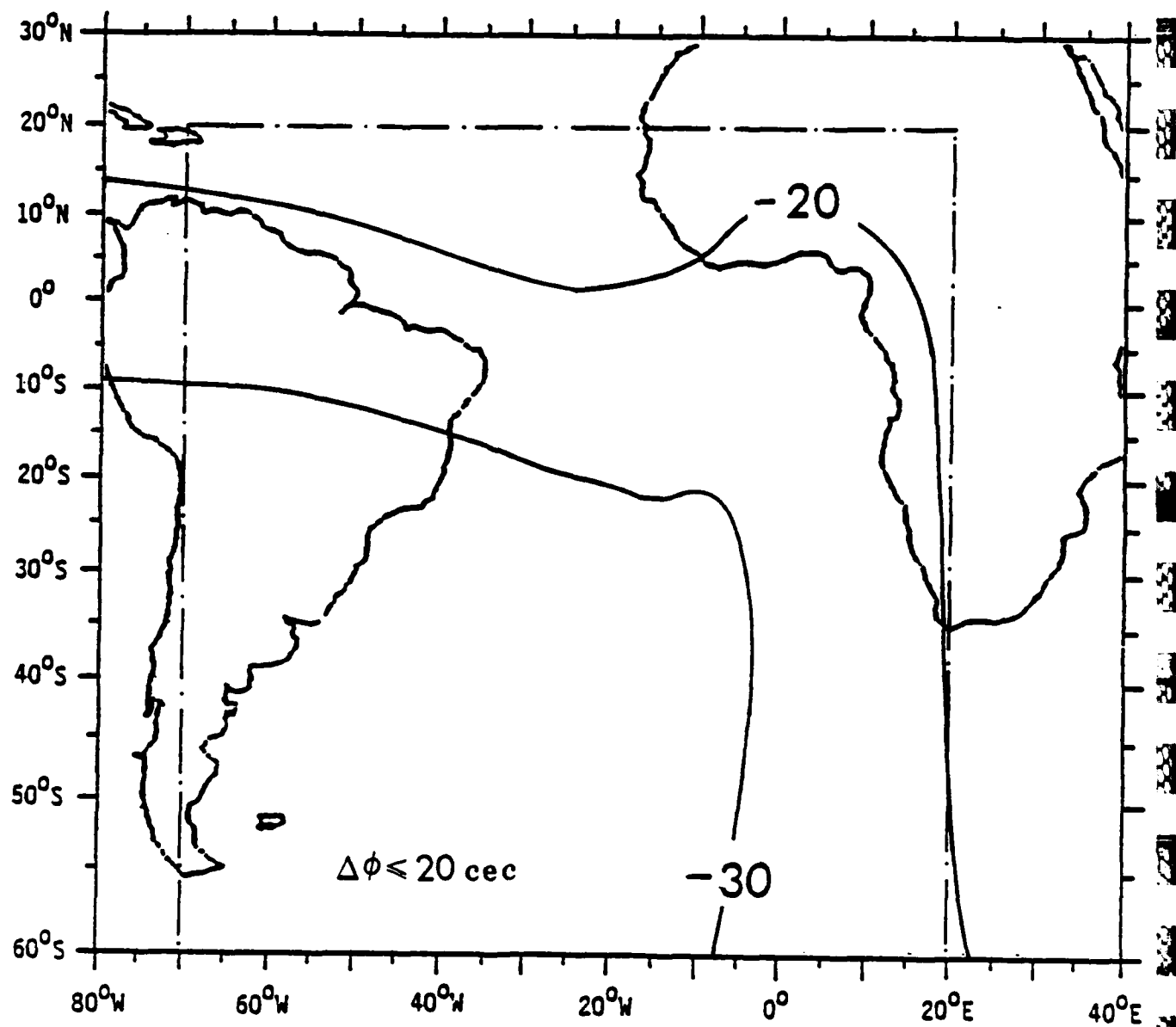
0600 GMT



NORWAY (A)

AUGUST

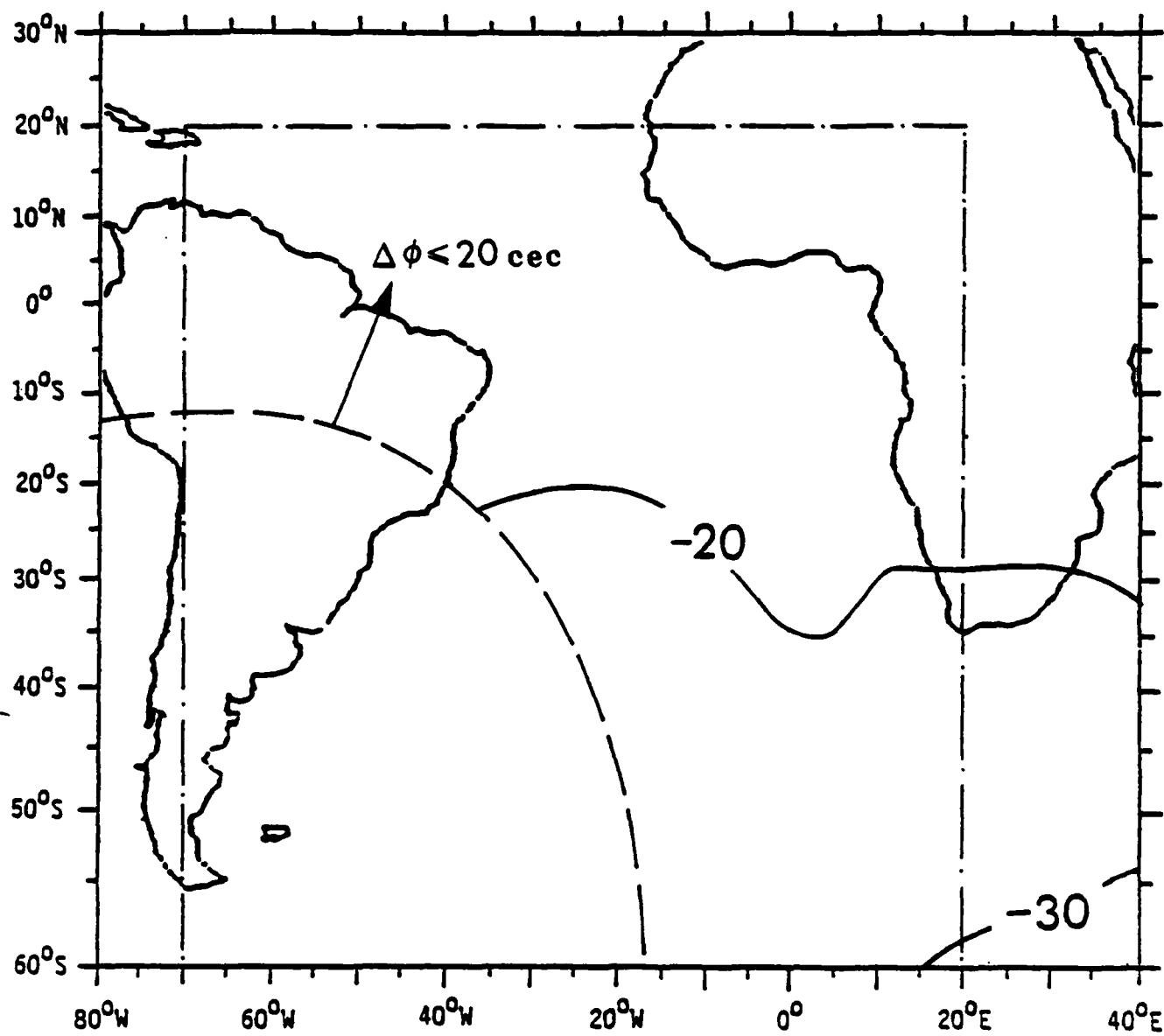
1800 GMT



NORWAY (A)

NOVEMBER

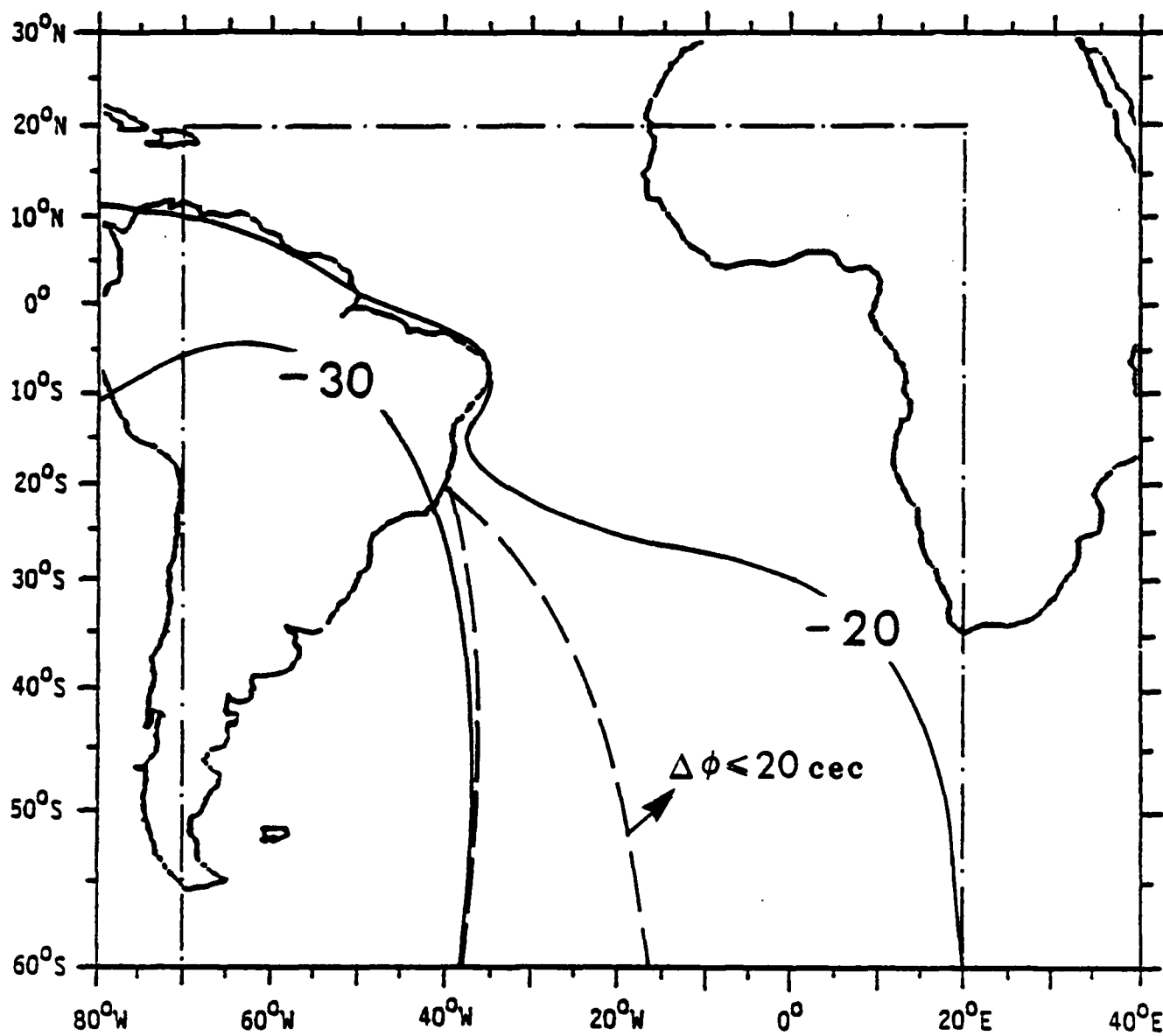
0600 GMT



NORWAY (A)

NOVEMBER

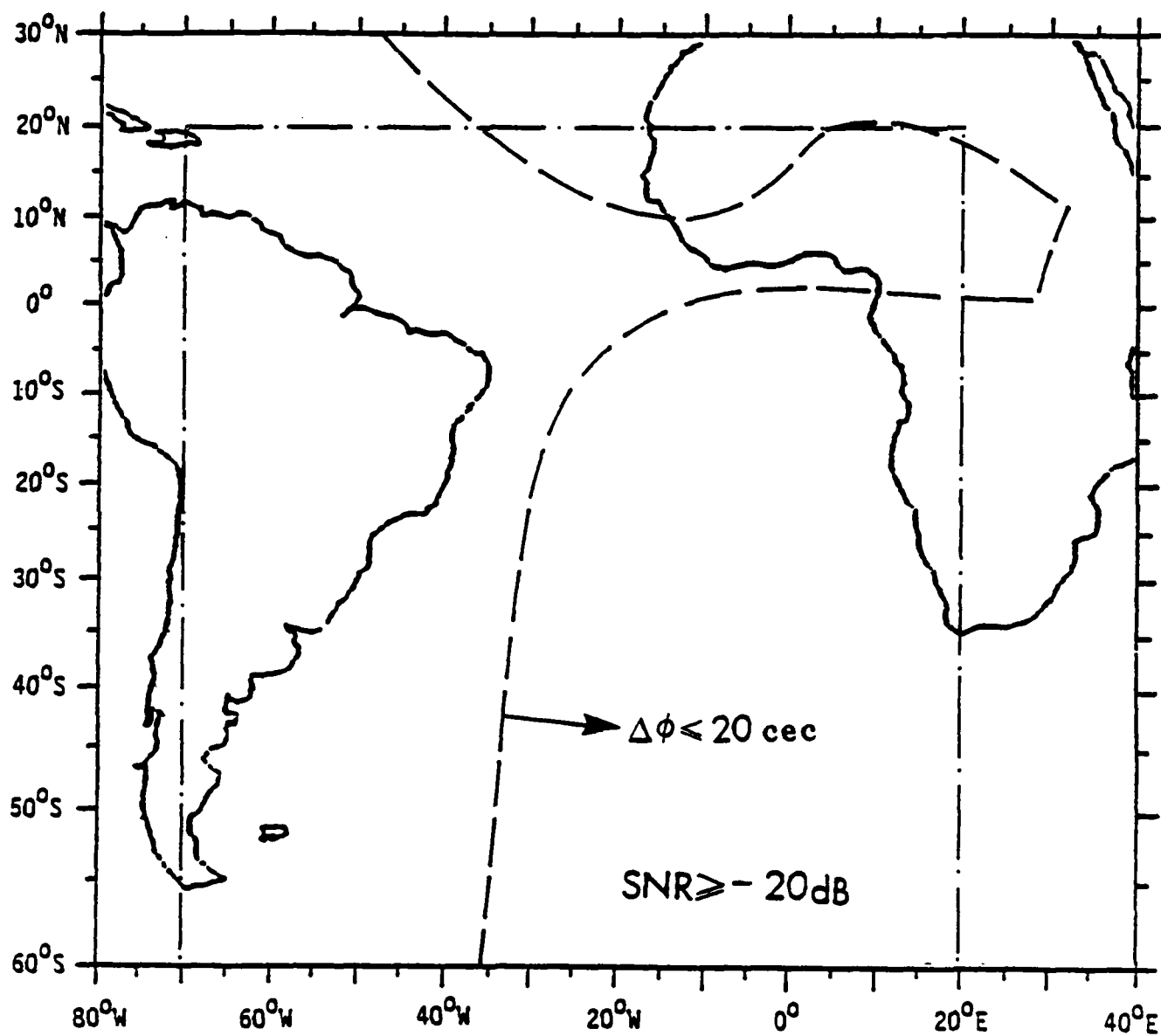
1800 GMT



LIBERIA (B)

FEBRUARY

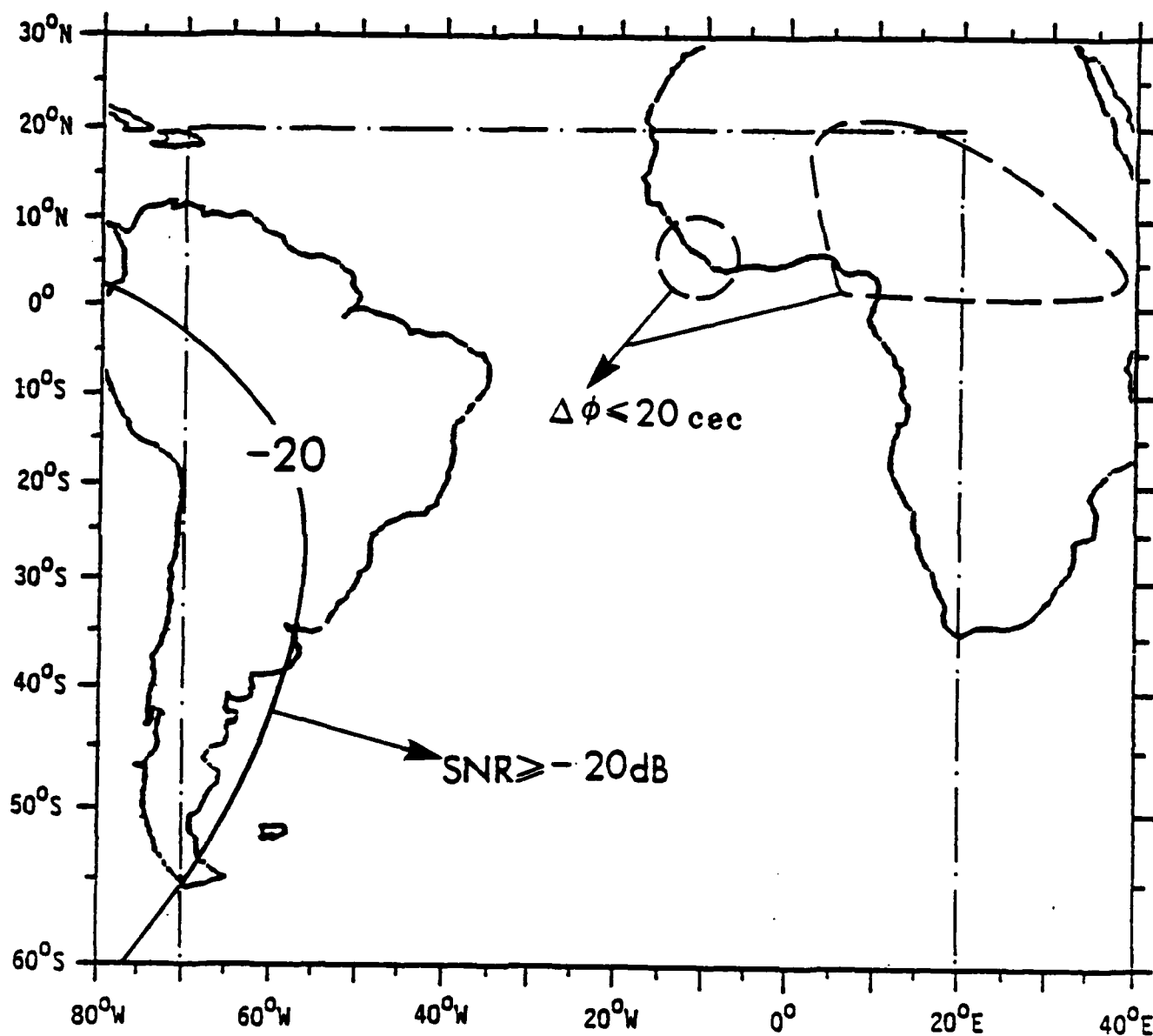
0600 GMT



LIBERIA (B)

FEBRUARY

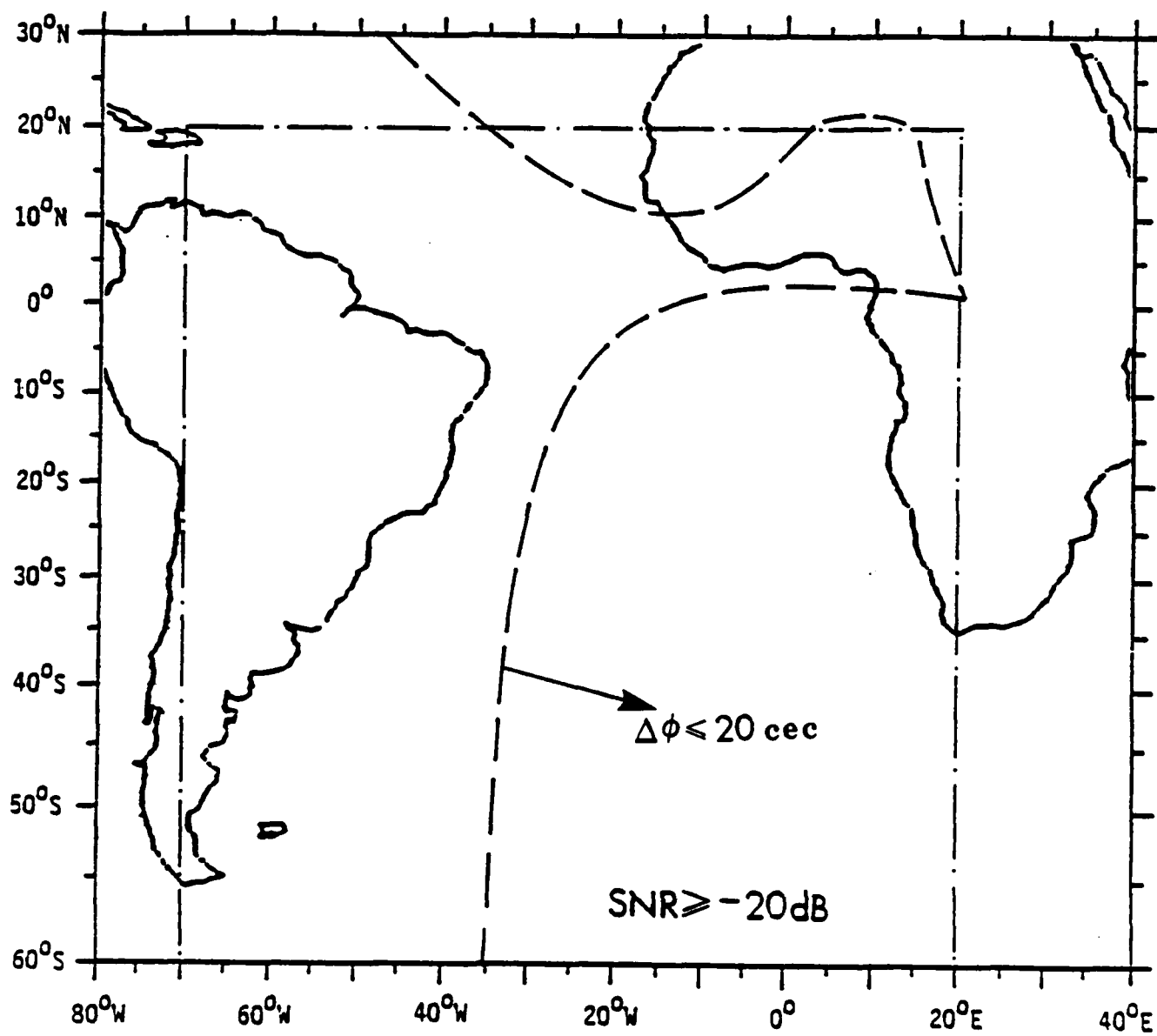
1800 GMT



LIBERIA (B)

MAY

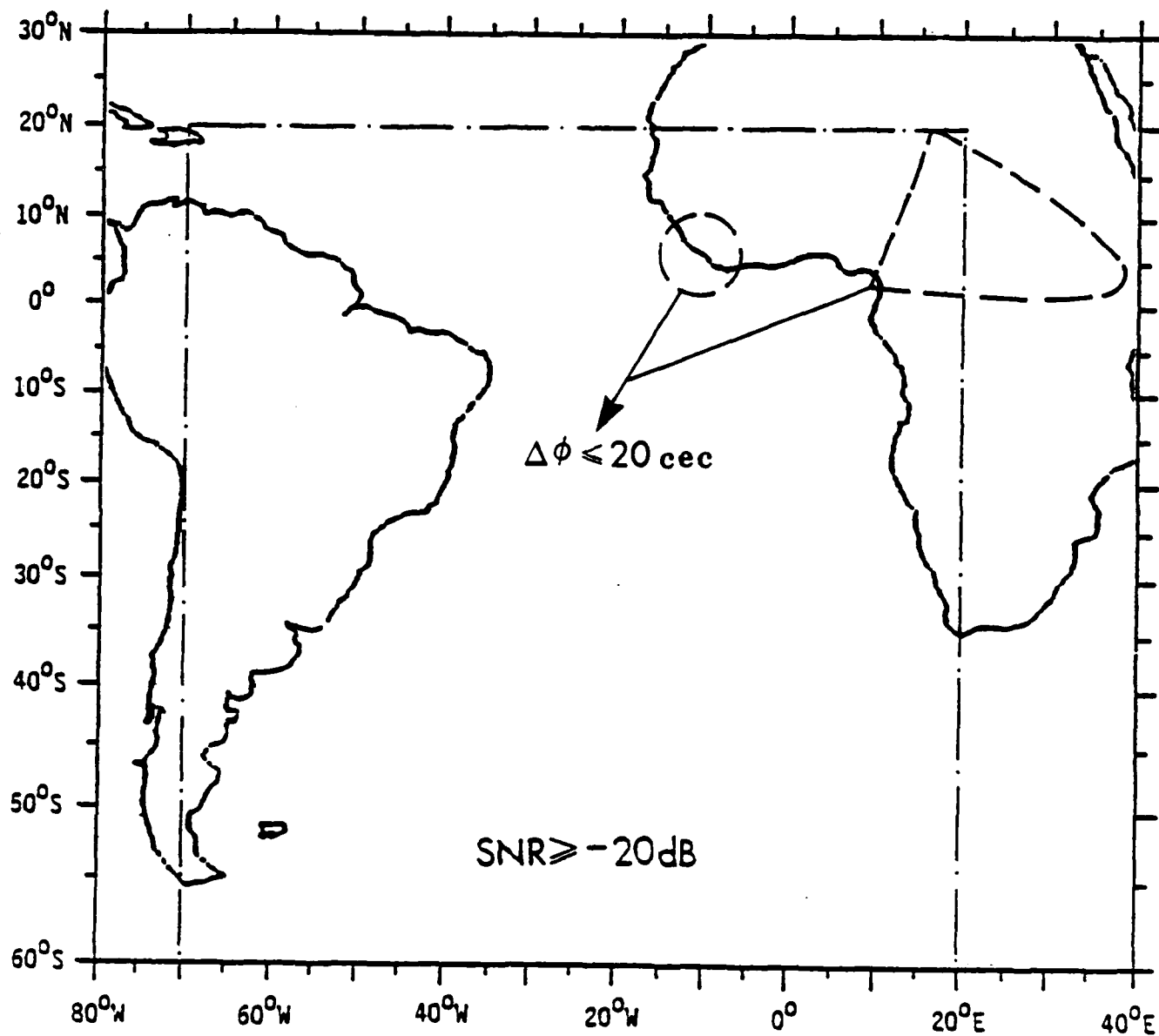
0600 GMT



LIBERIA (B)

MAY

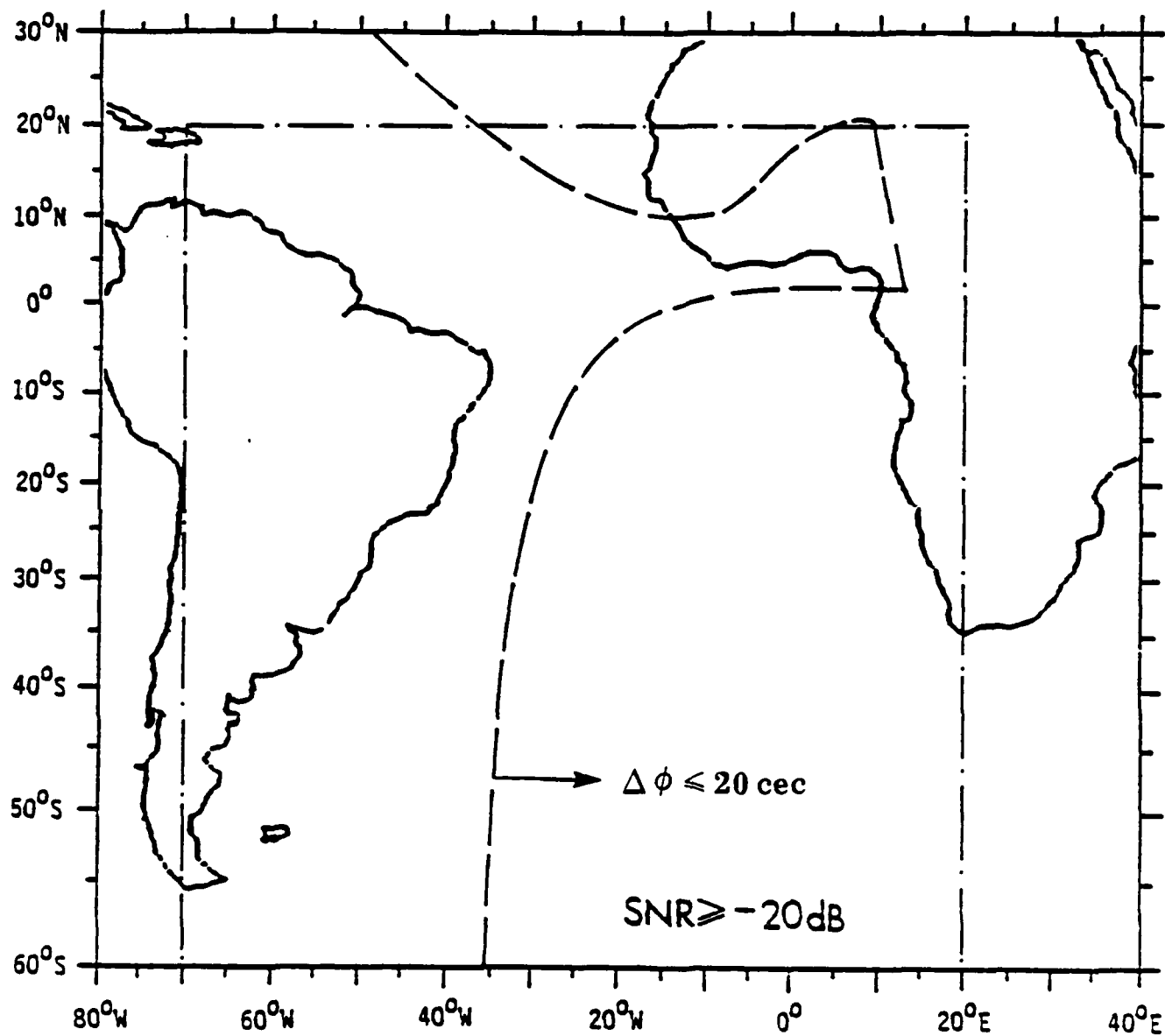
1800 GMT



LIBERIA (B)

AUGUST

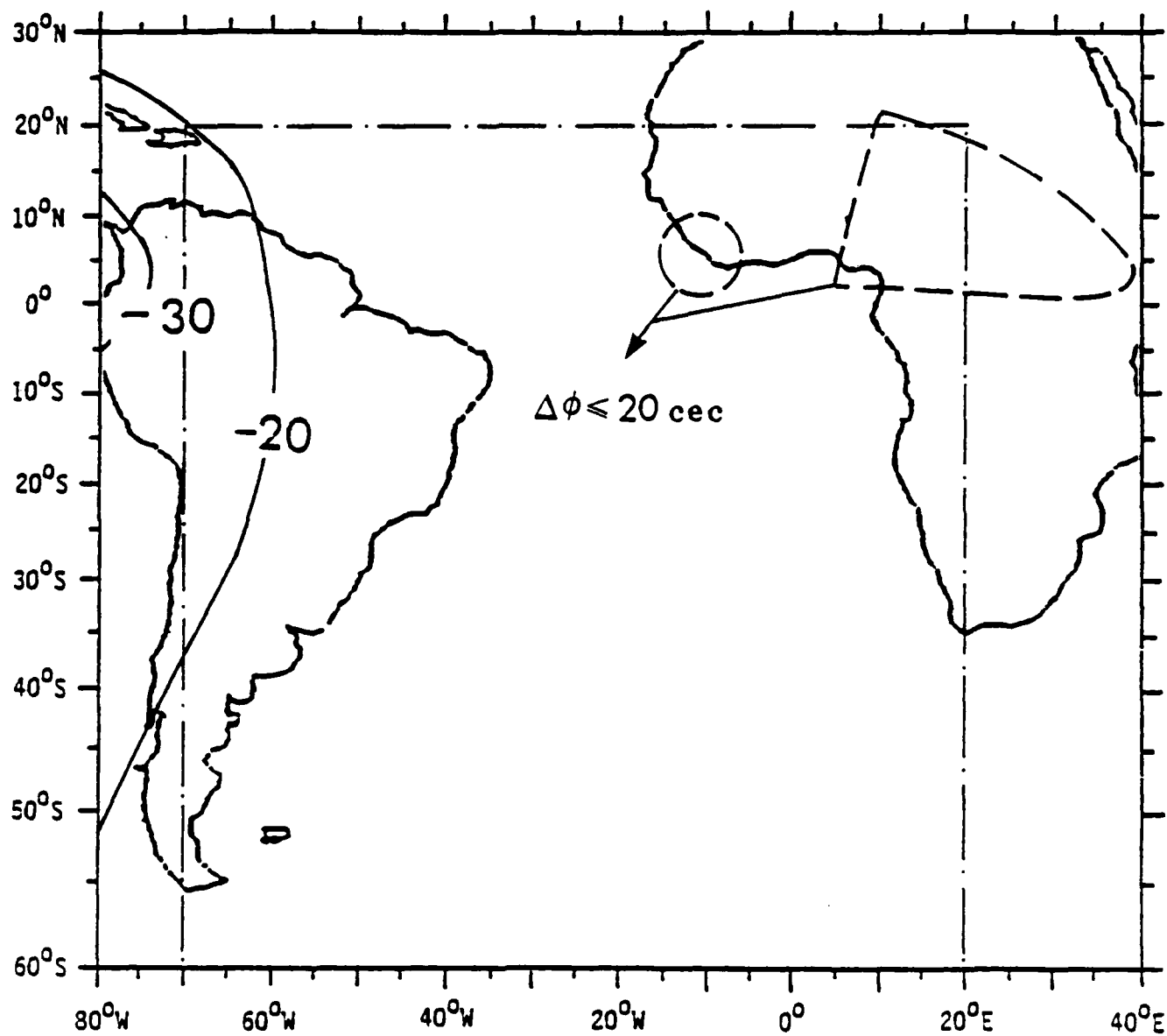
0600 GMT



LIBERIA (B)

AUGUST

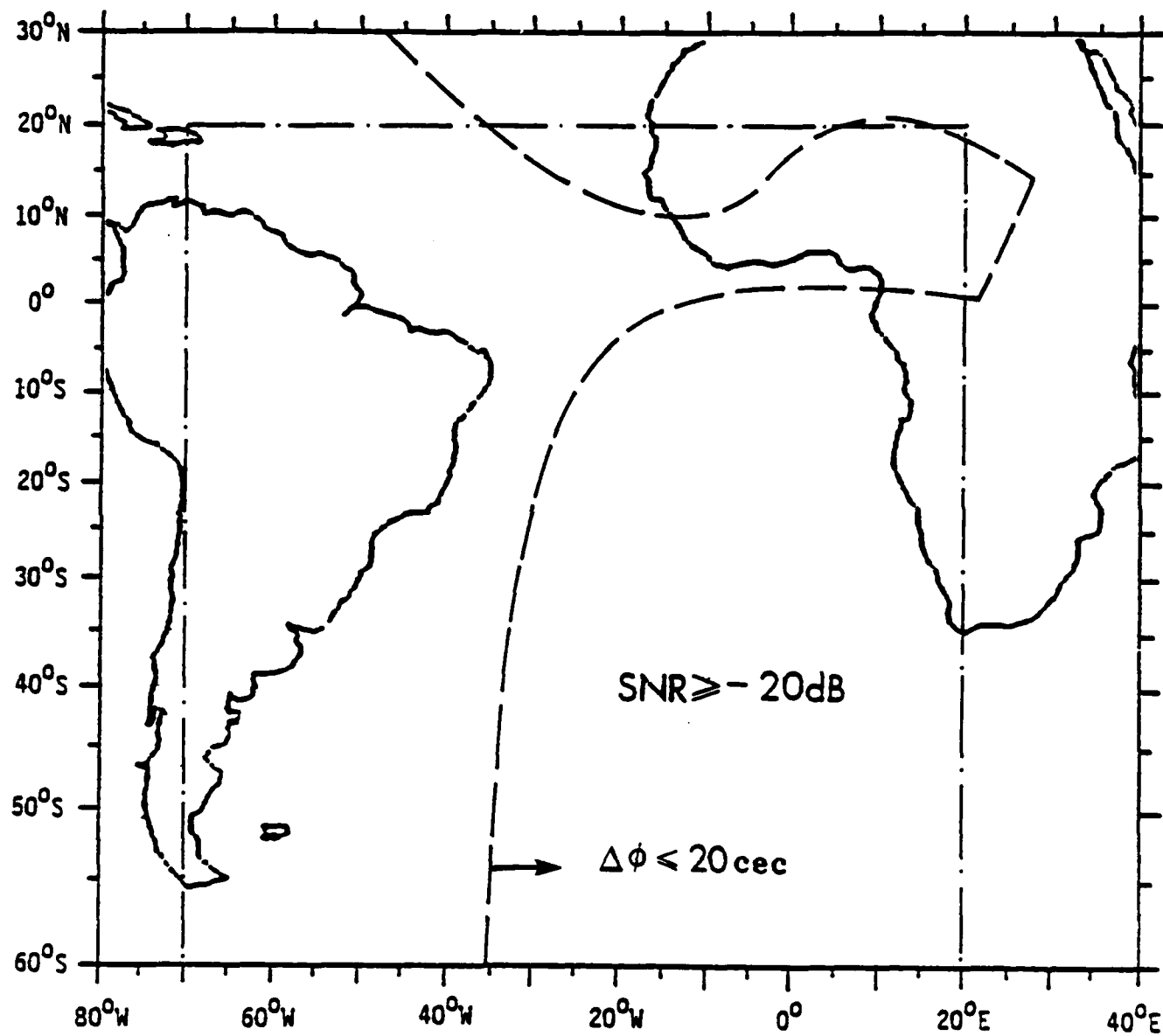
1800 GMT



LIBERIA (B)

NOVEMBER

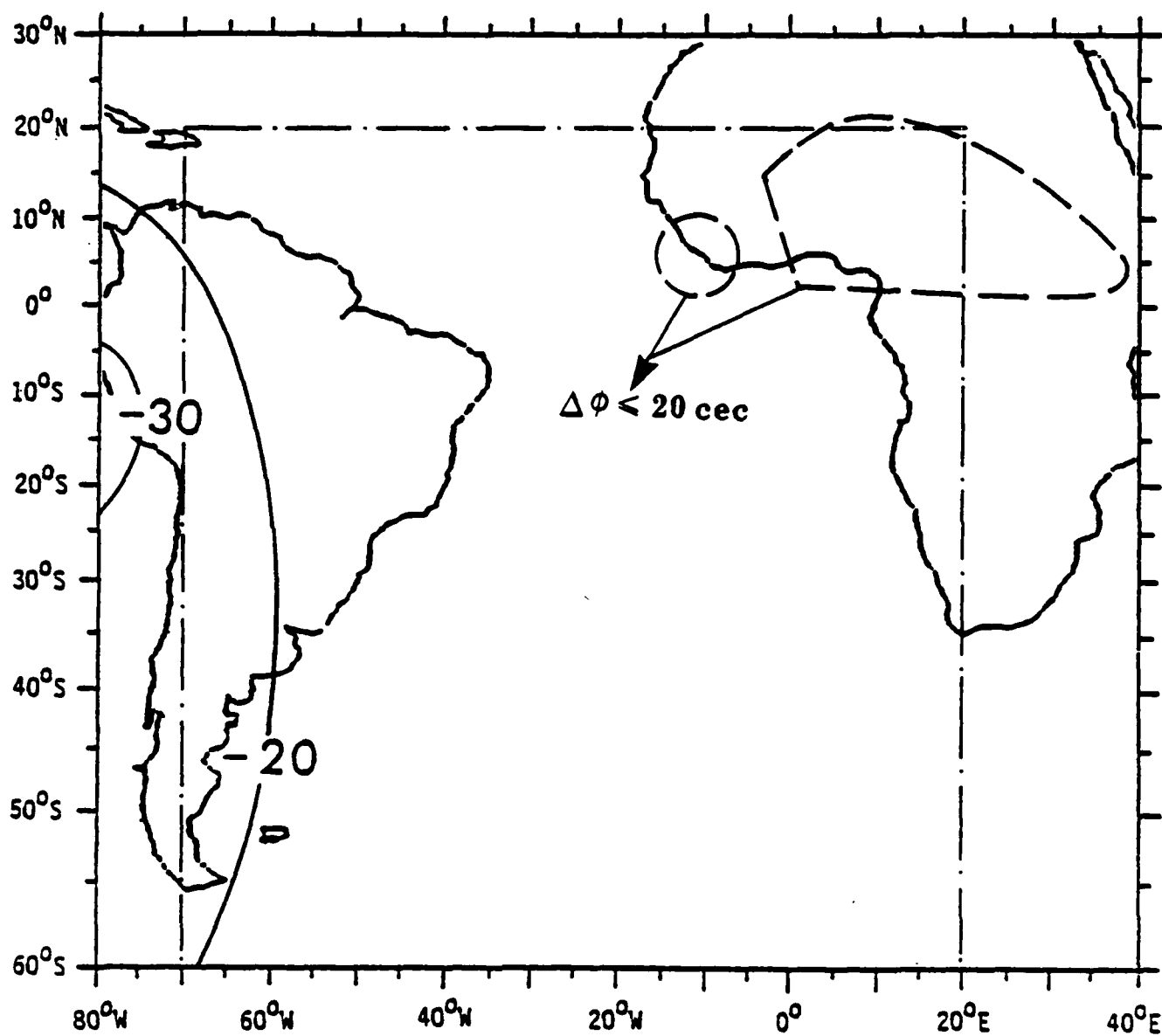
0000 GMT



LIBERIA (B)

NOVEMBER

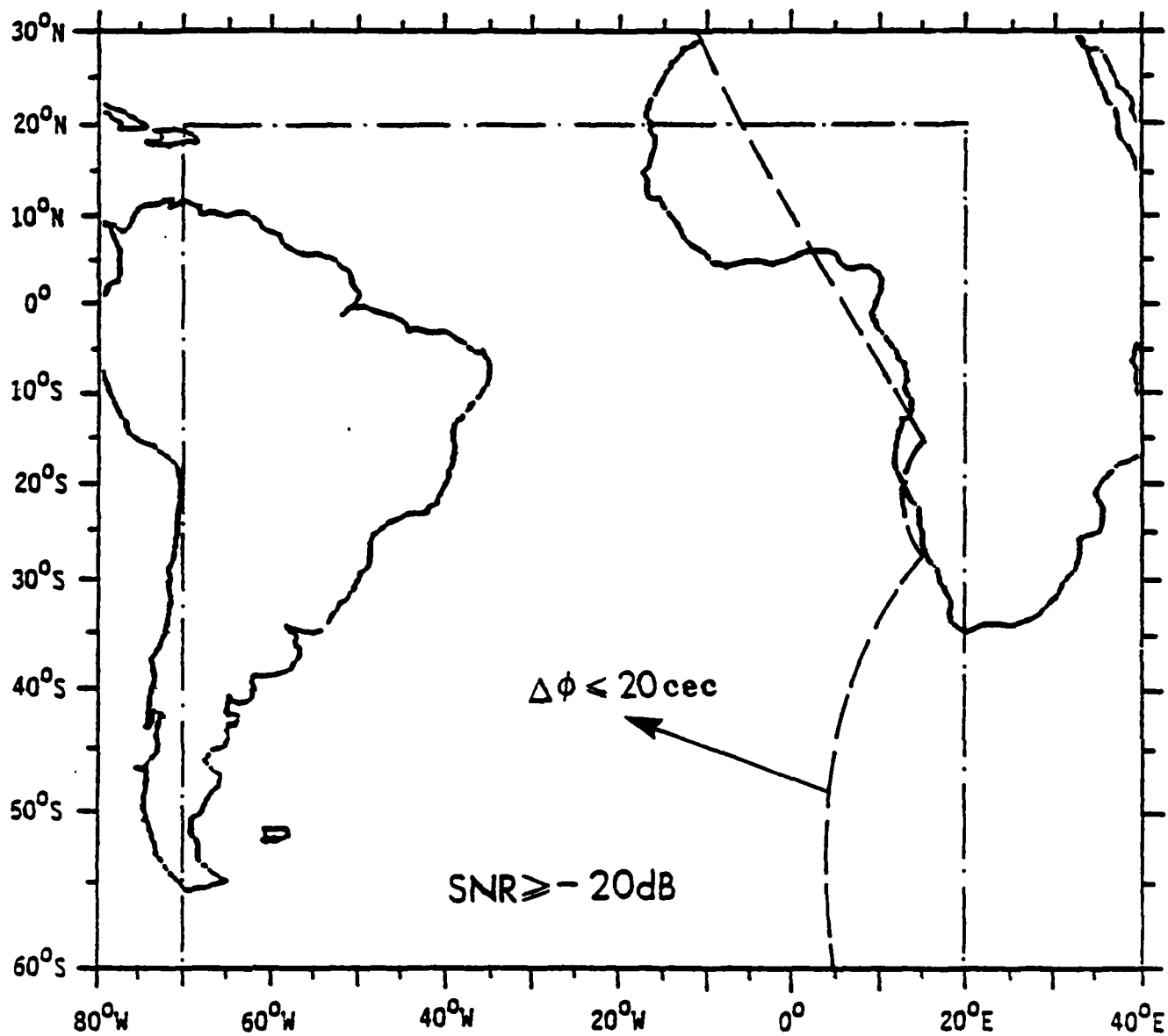
1800 GMT



HAWAII (C)

FEBRUARY

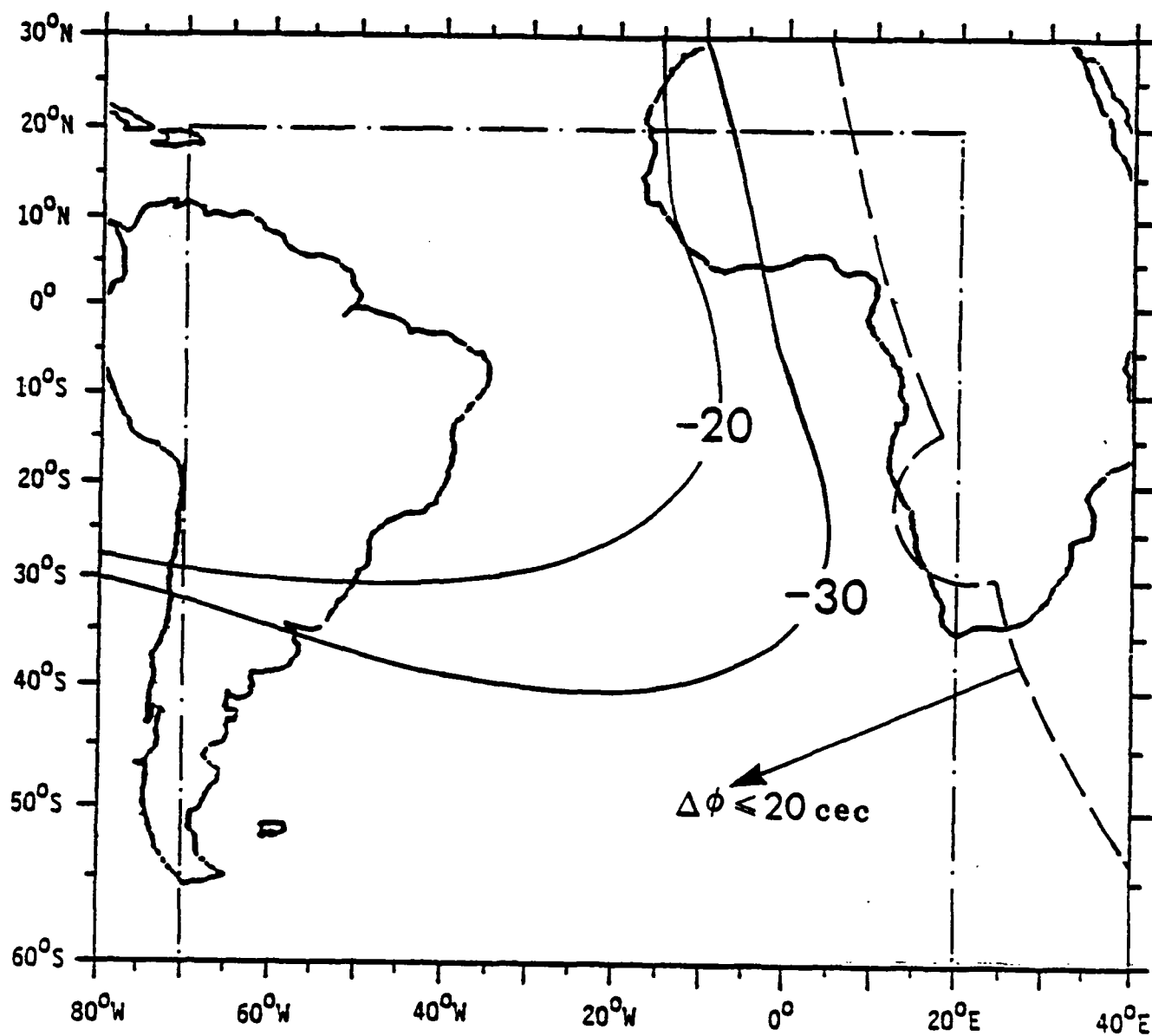
0600 GMT



HAWAII (C)

FEBRUARY

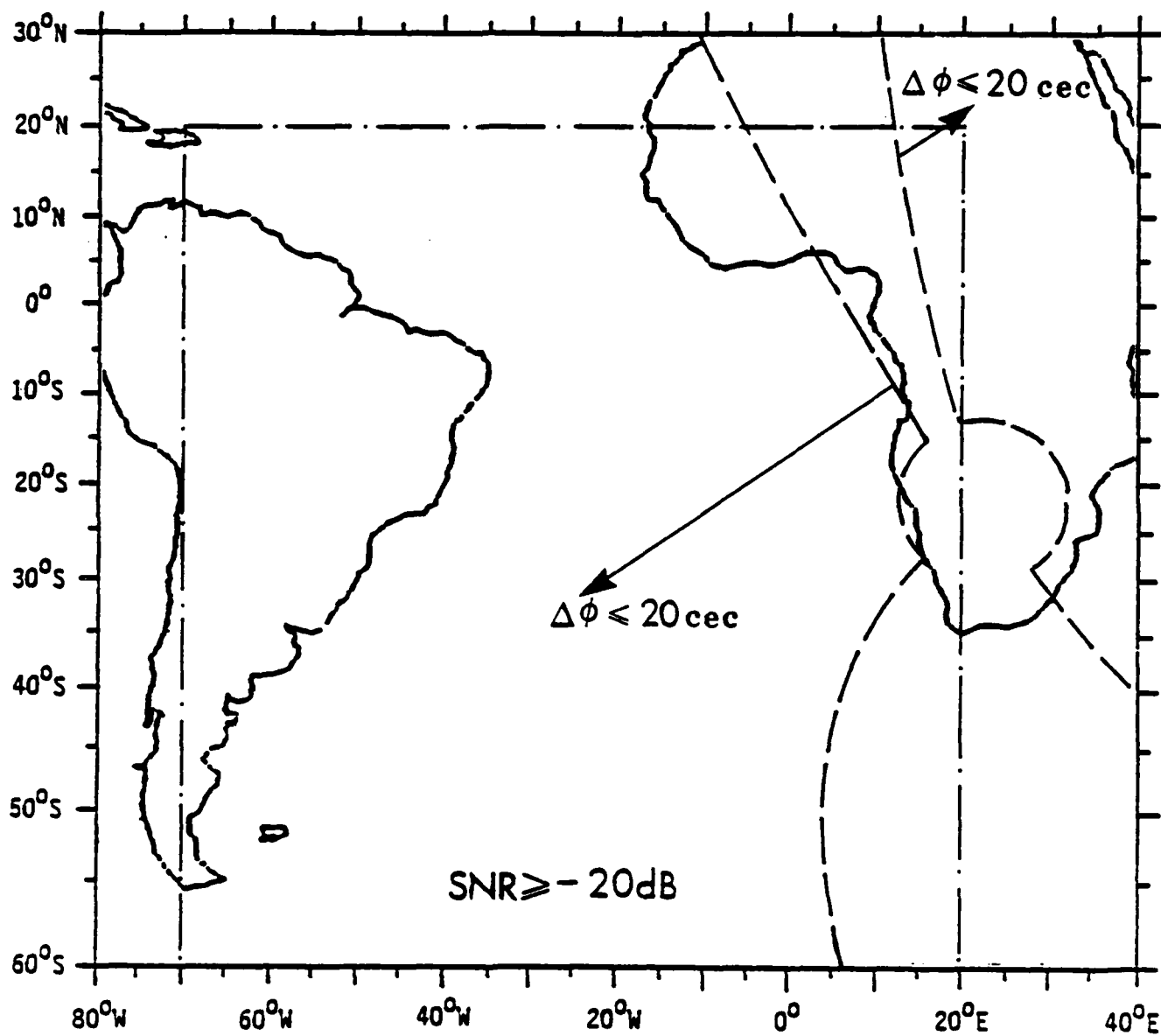
1800 GMT



HAWAII (C)

MAY

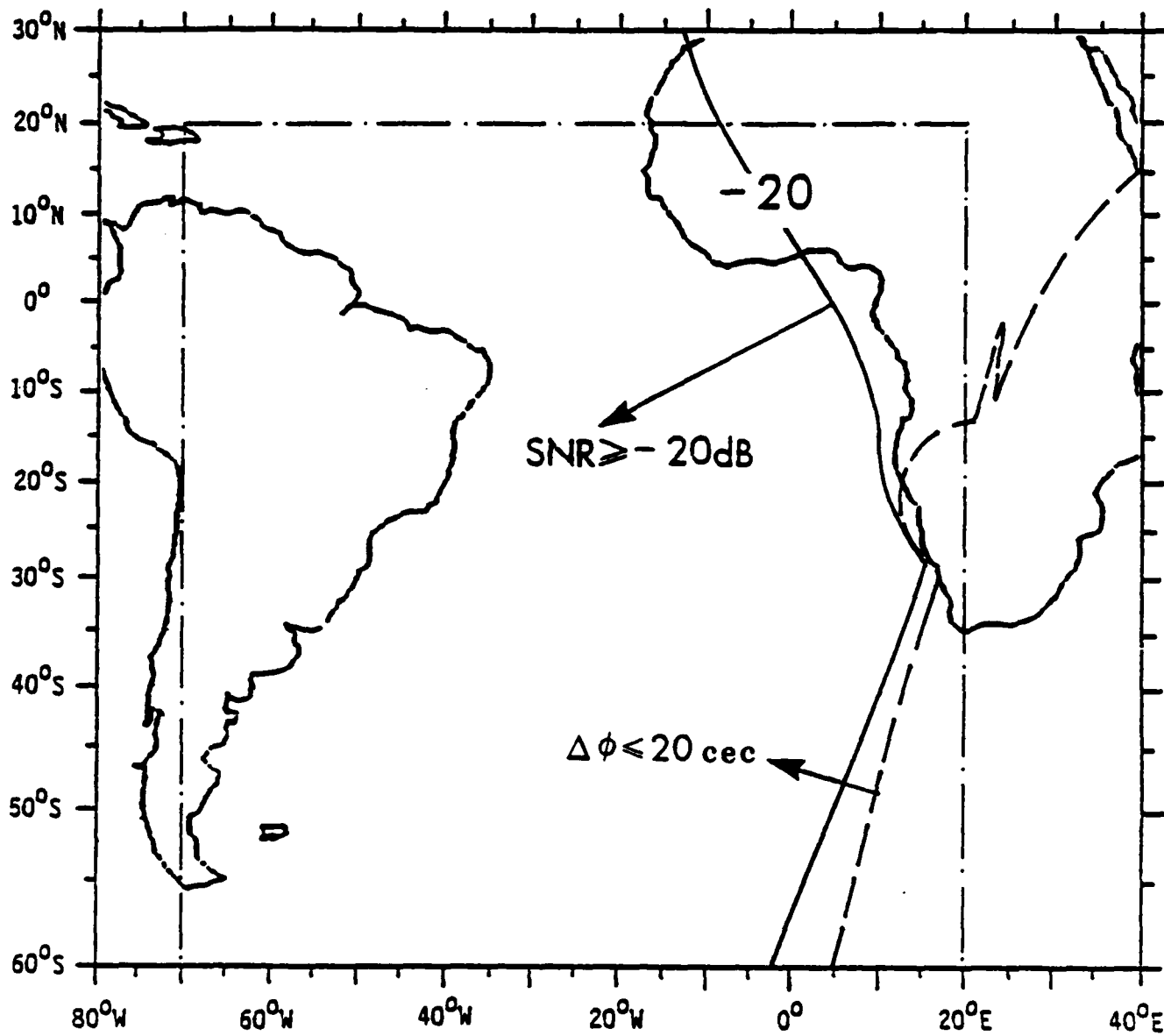
0600 GMT



HAWAII (C)

MAY

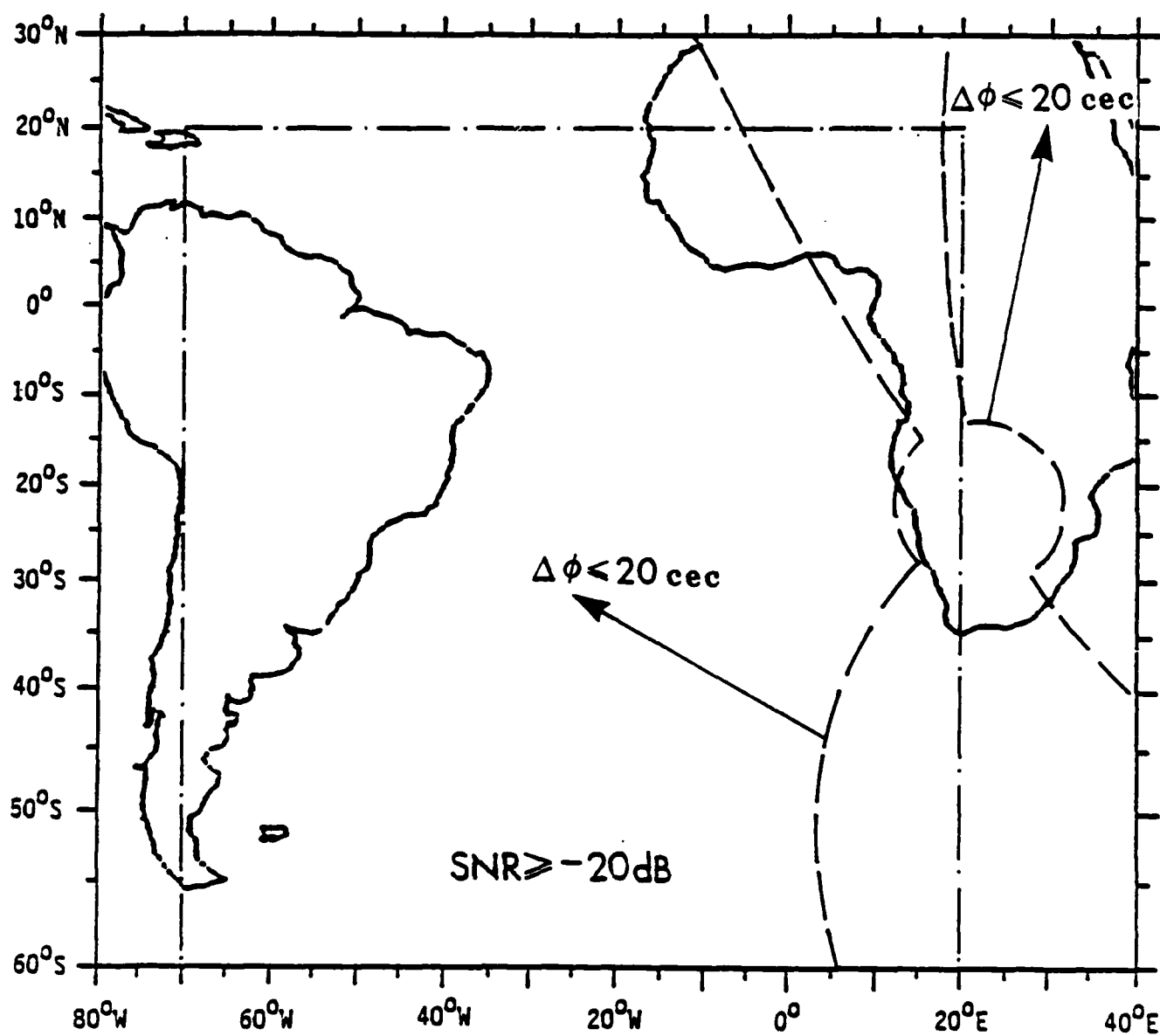
1800 GMT



HAWAII (C)

AUGUST

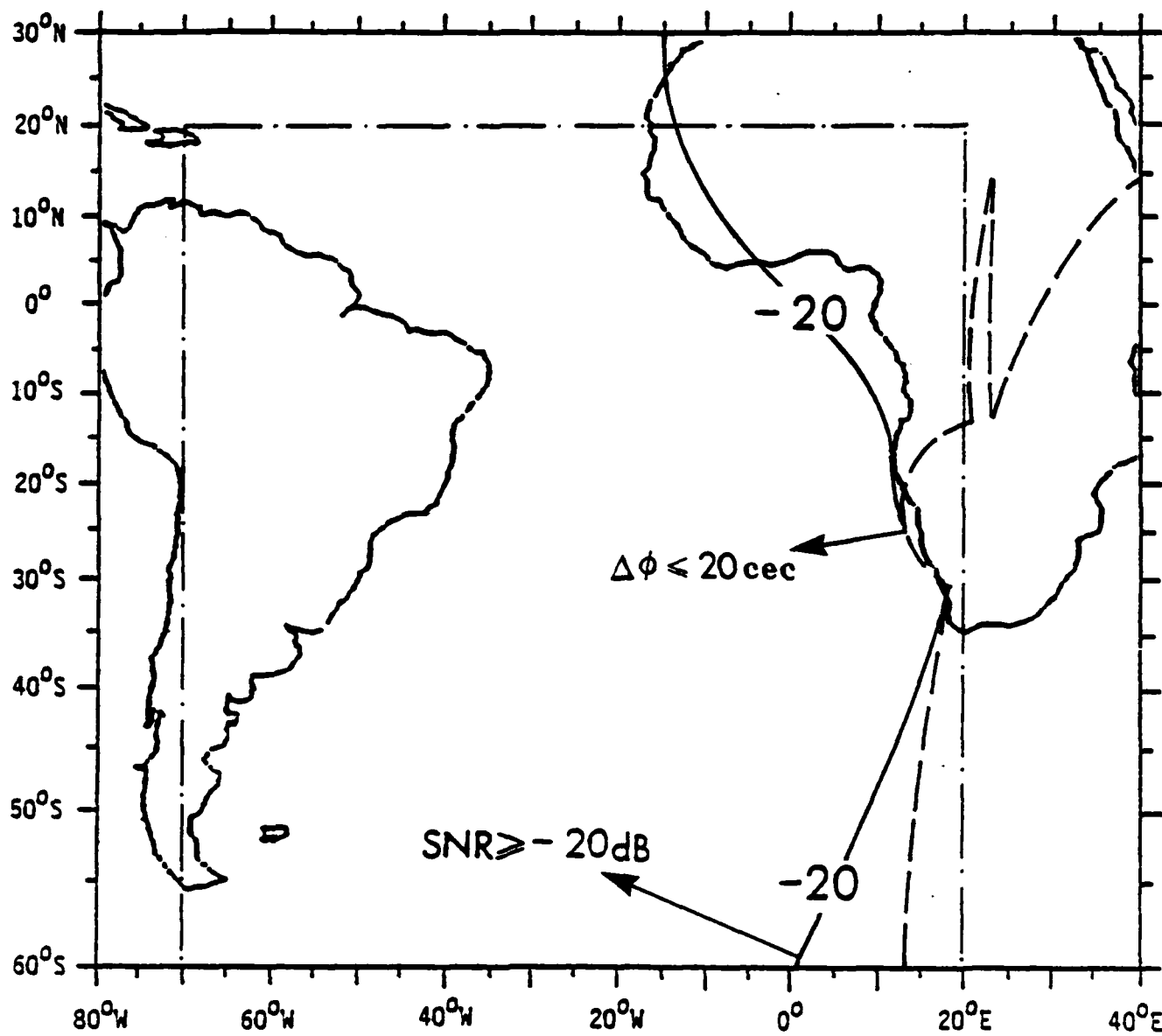
0600 GMT



HAWAII (C)

AUGUST

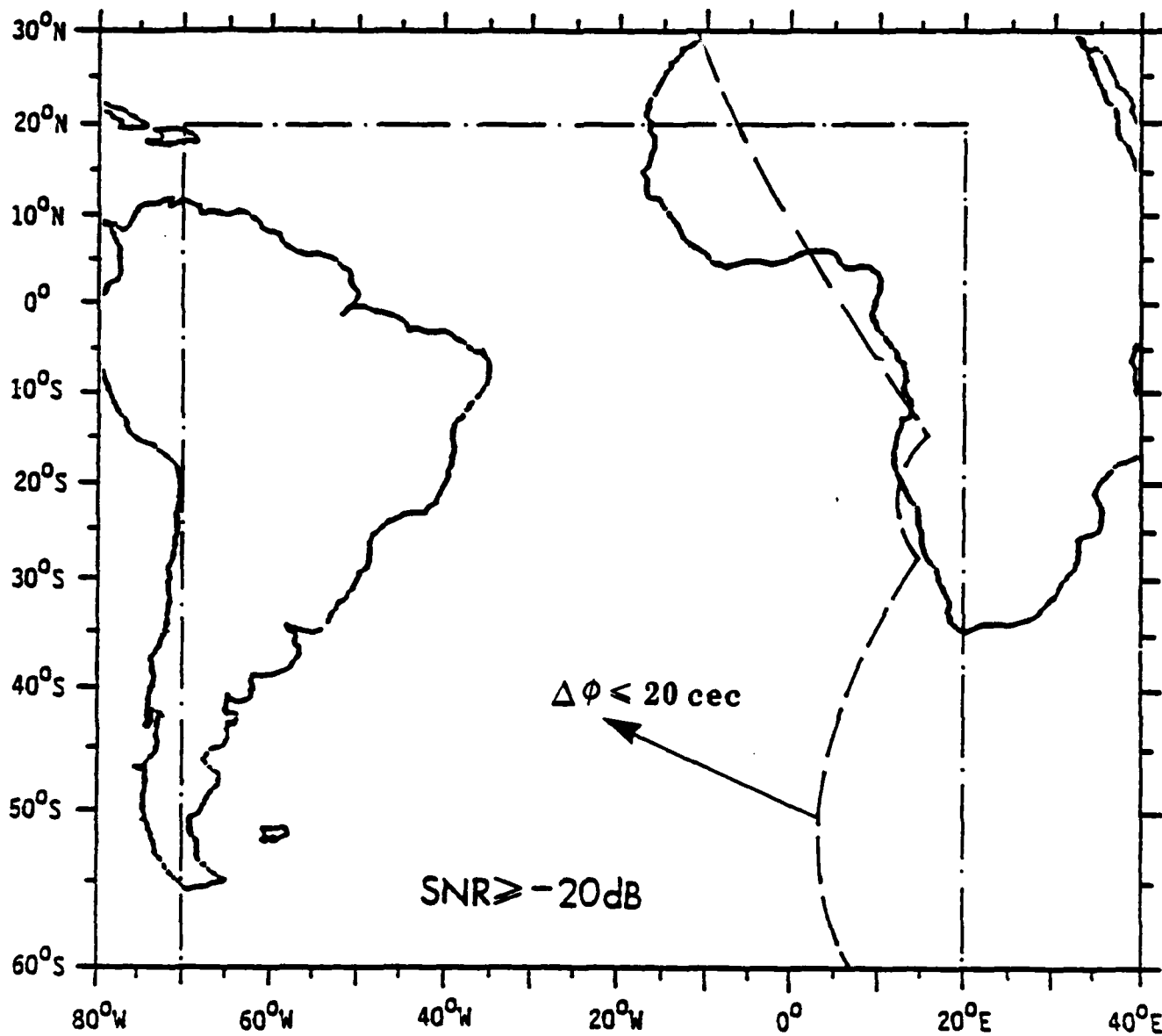
1800 GMT



HAWAII (C)

NOVEMBER

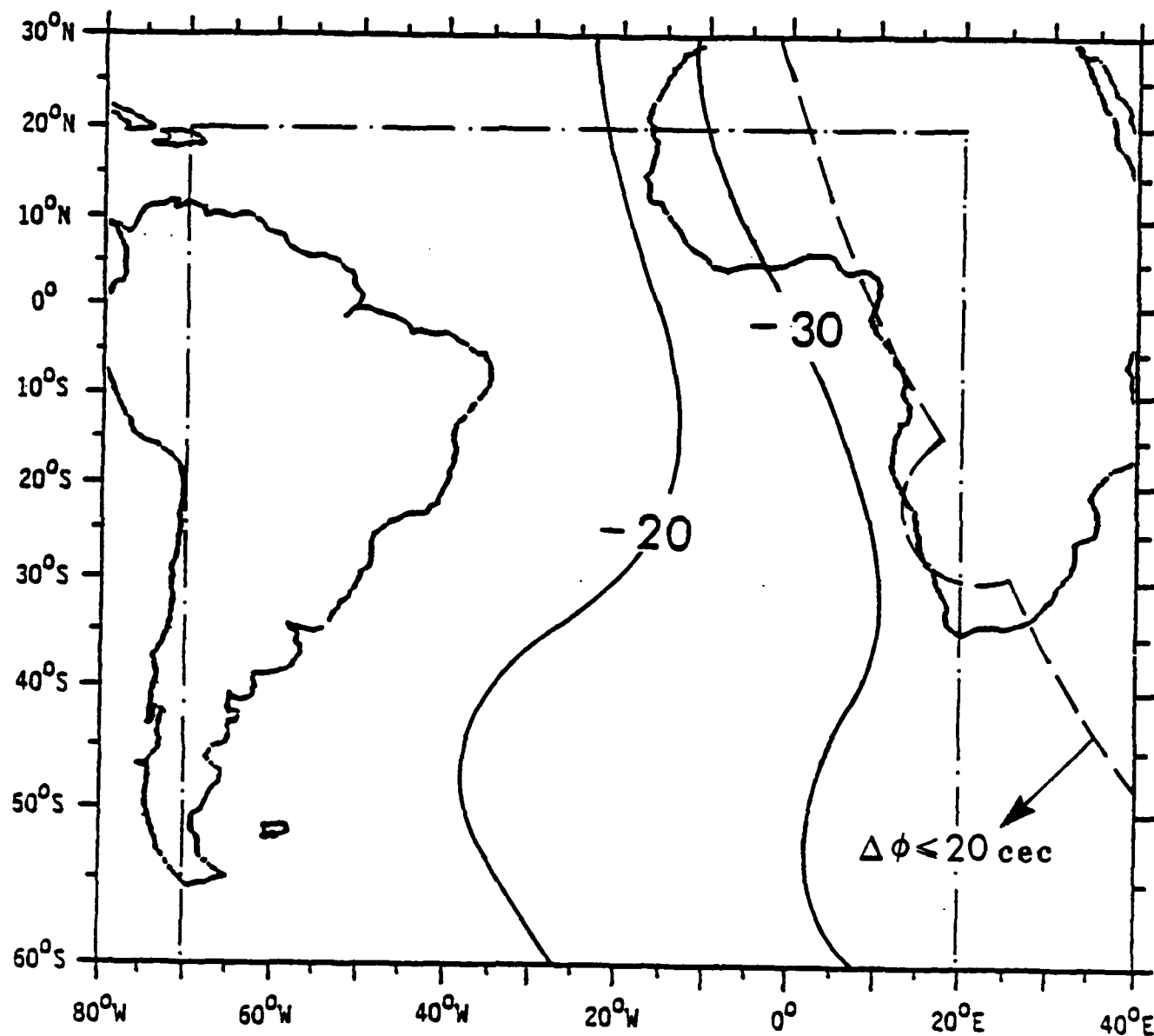
0600 GMT



HAWAII (C)

NOVEMBER

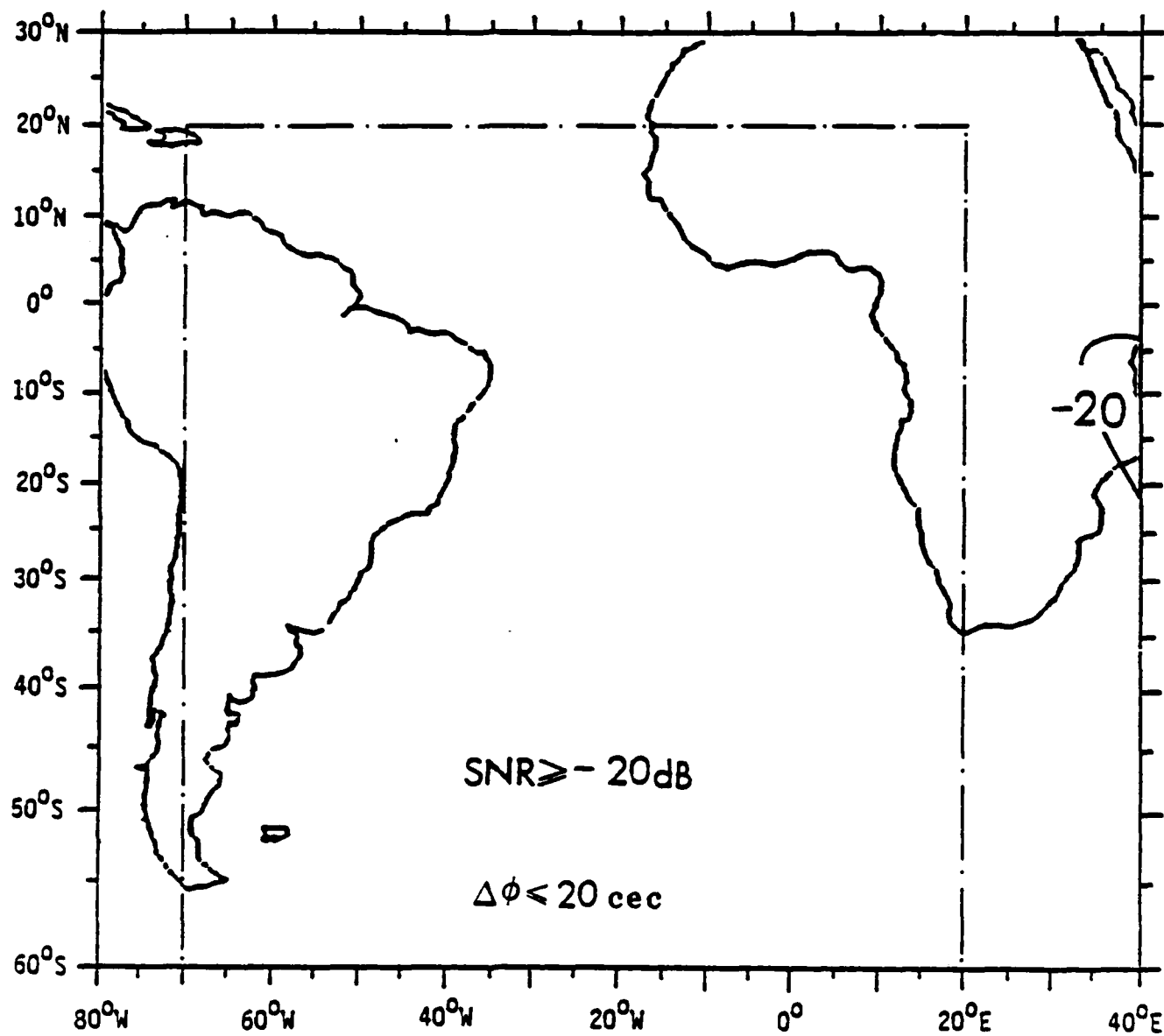
1800 GMT



NORTH DAKOTA (D)

FEBRUARY

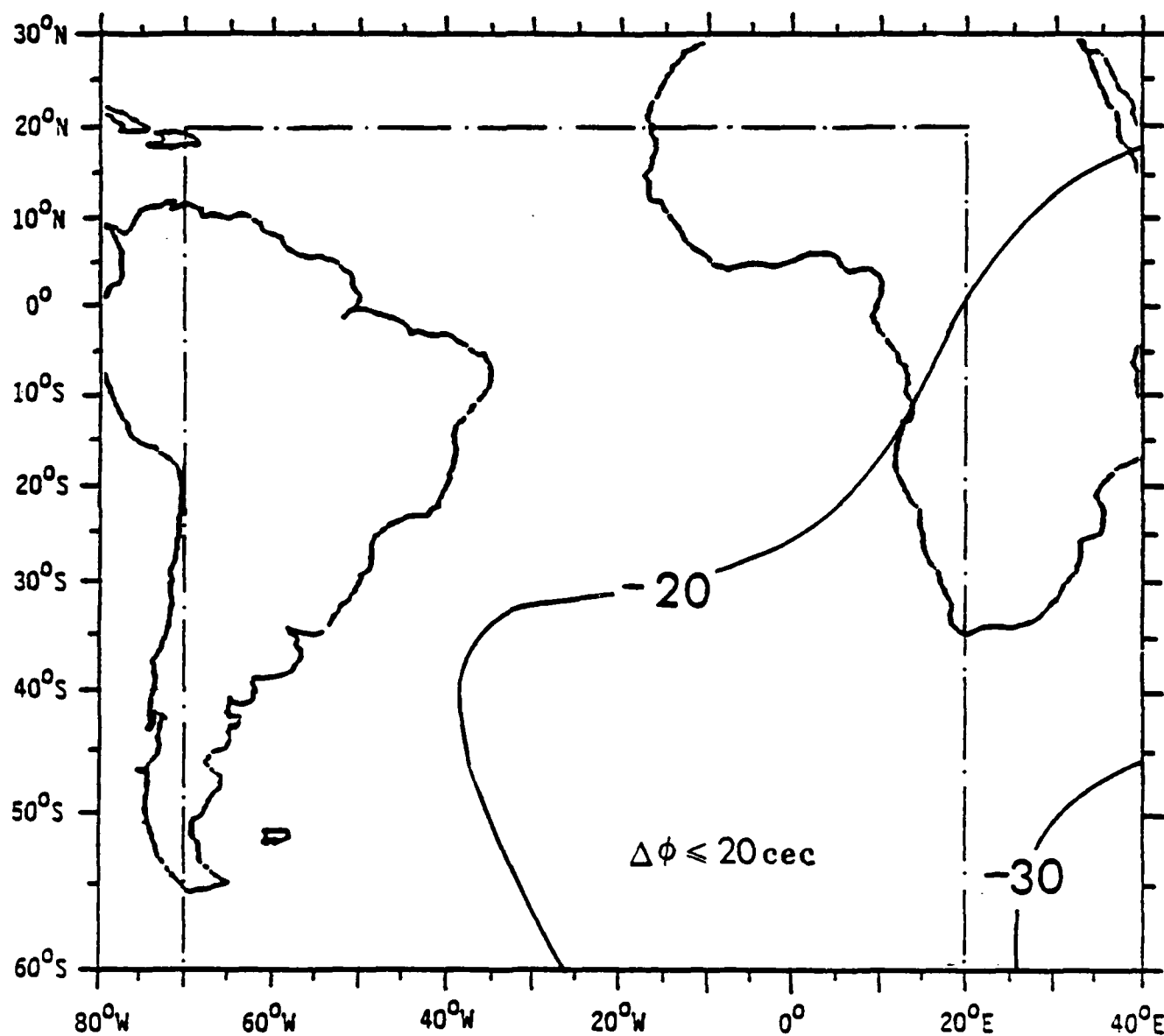
0600 GMT



NORTH DAKOTA (D)

FEBRUARY

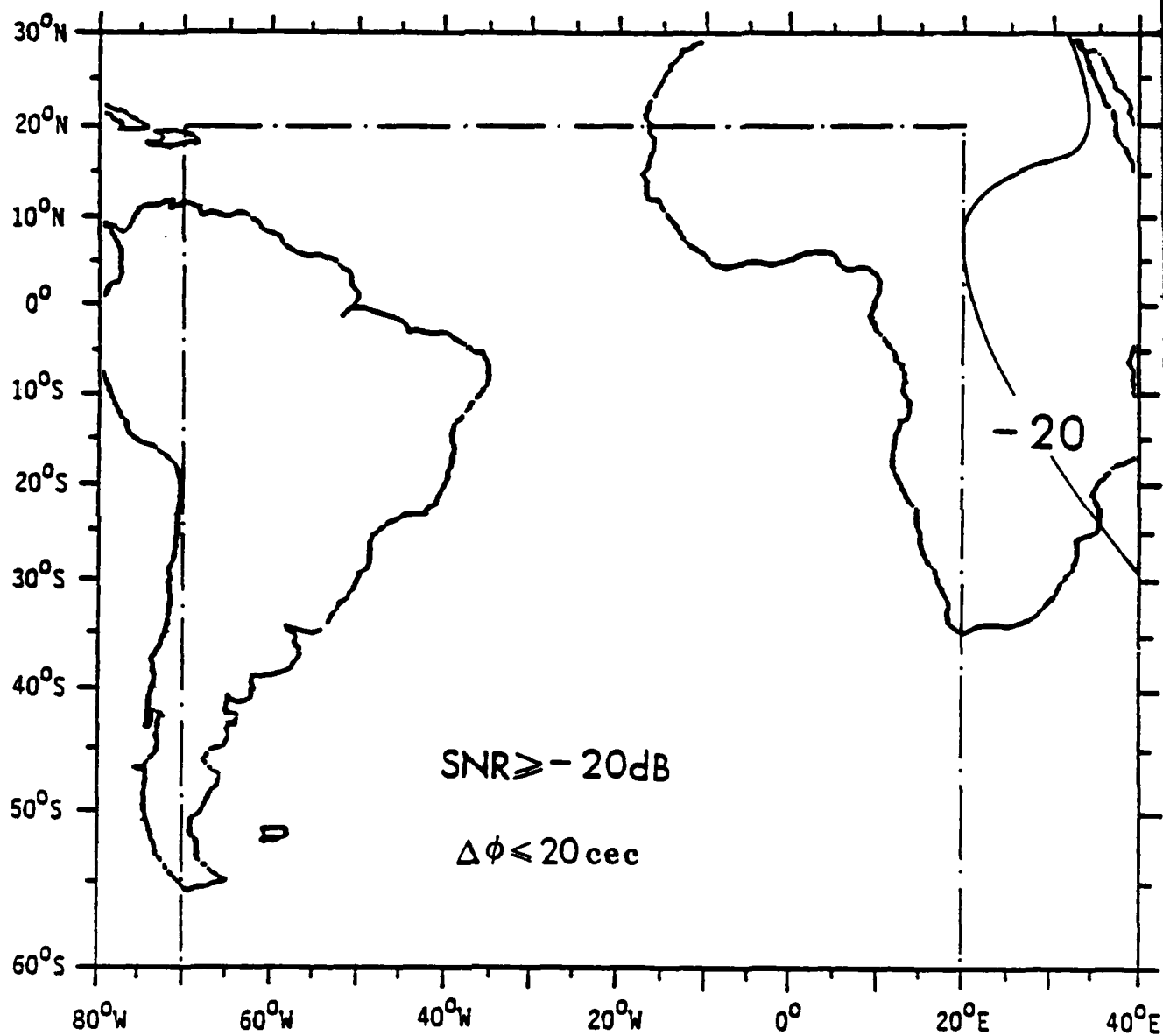
1800 GMT



NORTH DAKOTA (D)

MAY

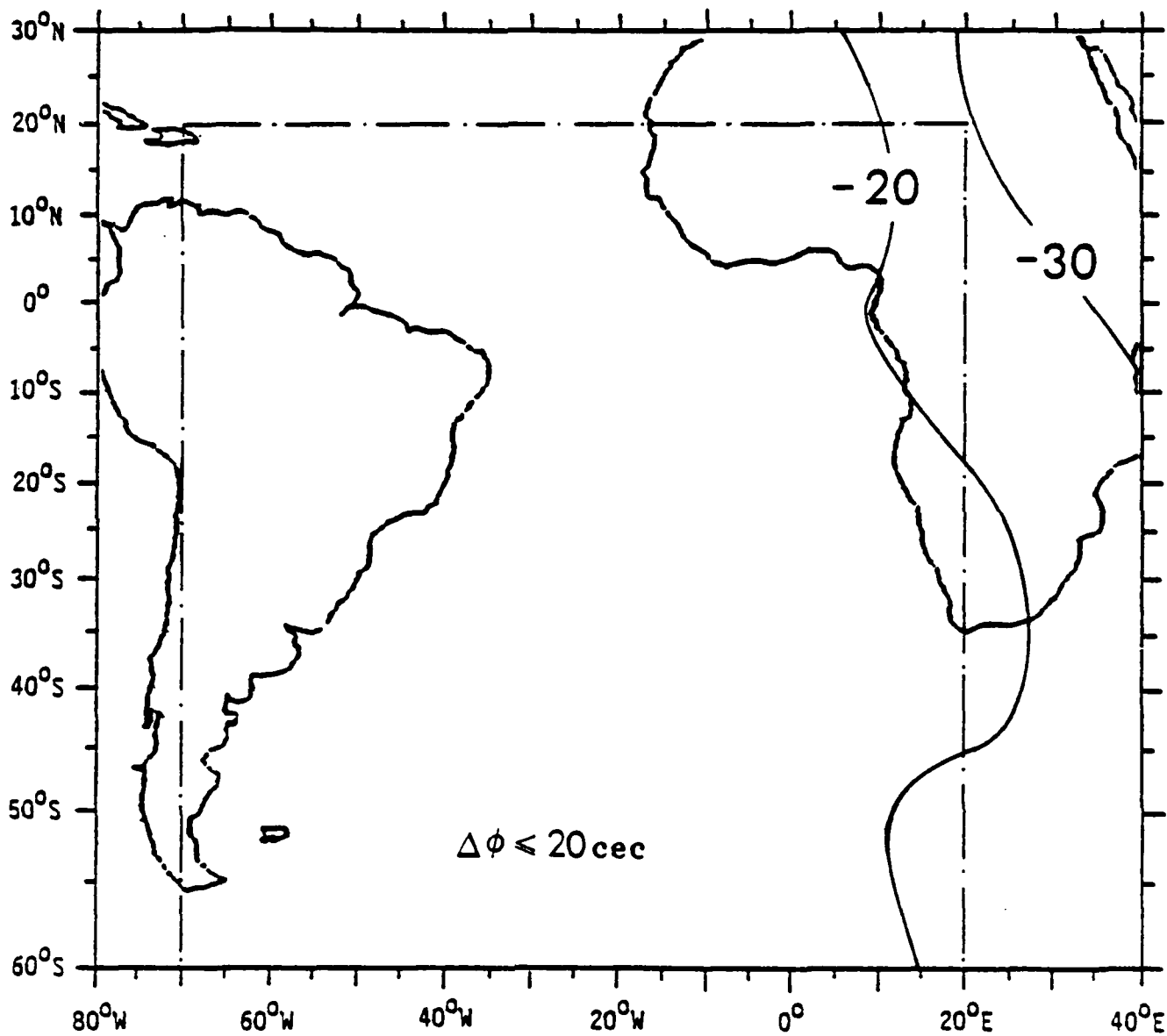
0600 GMT



NORTH DAKOTA (D)

MAY

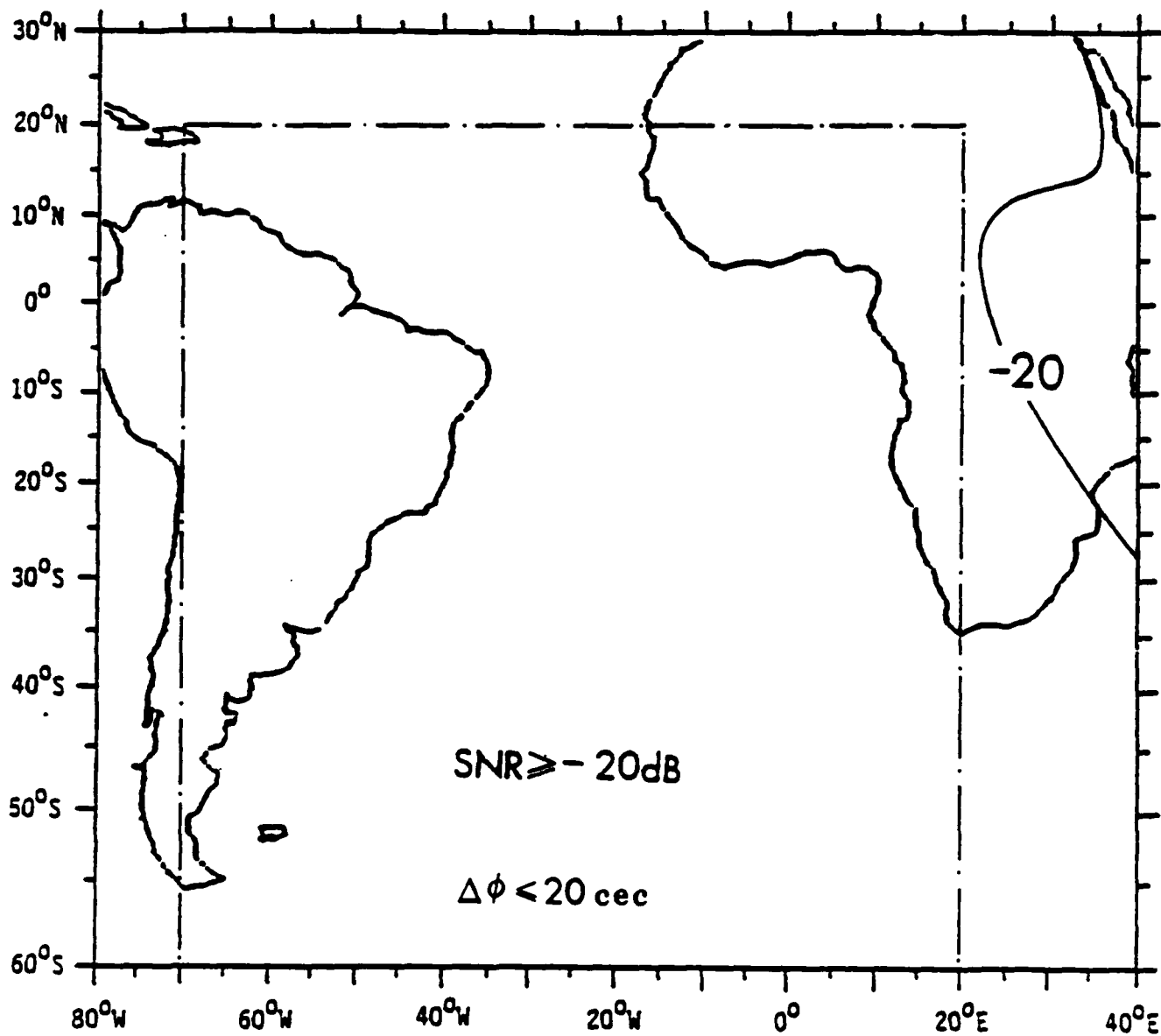
1800 GMT



NORTH DAKOTA (D)

AUGUST

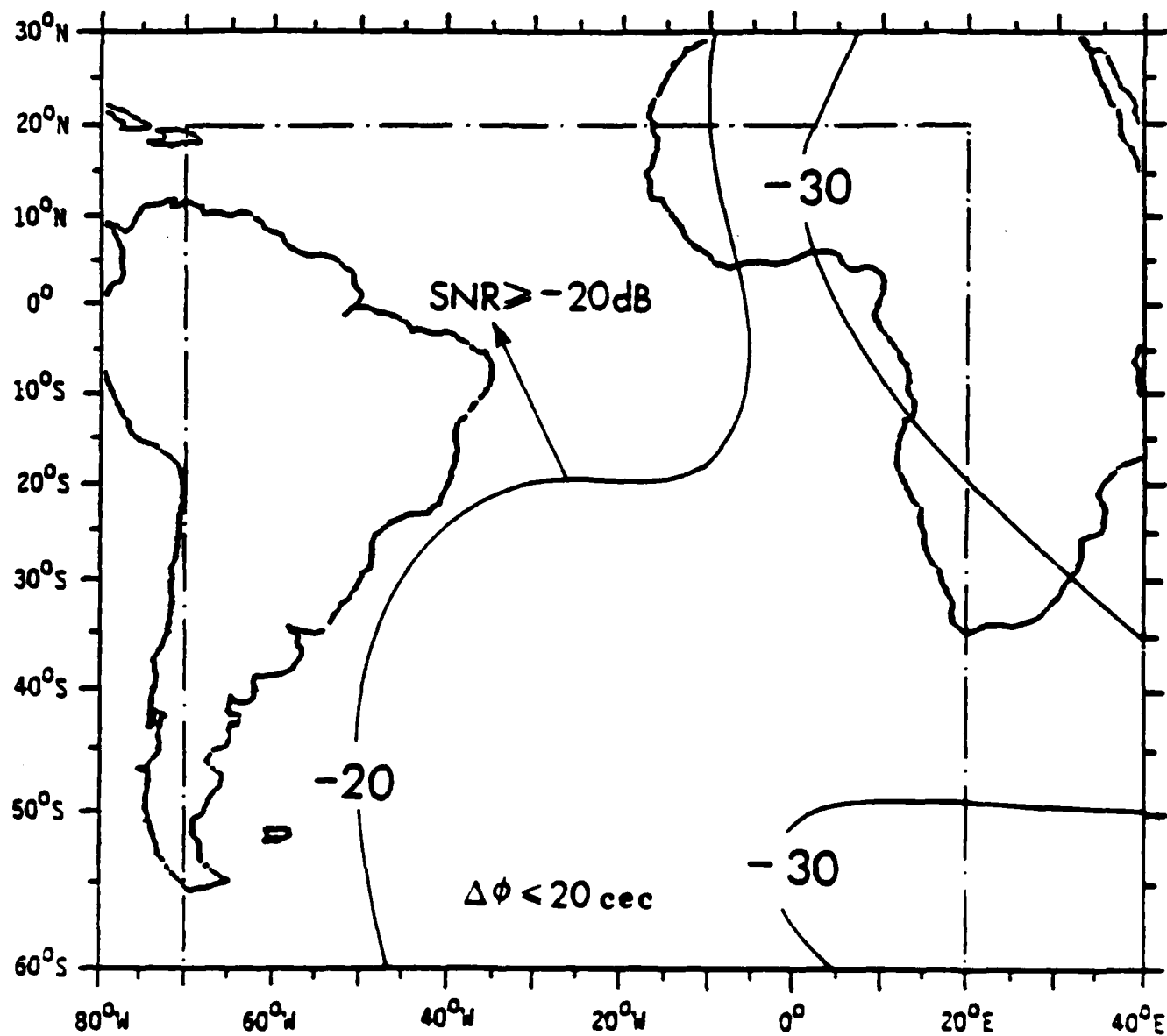
0600 GMT



NORTH DAKOTA (D)

AUGUST

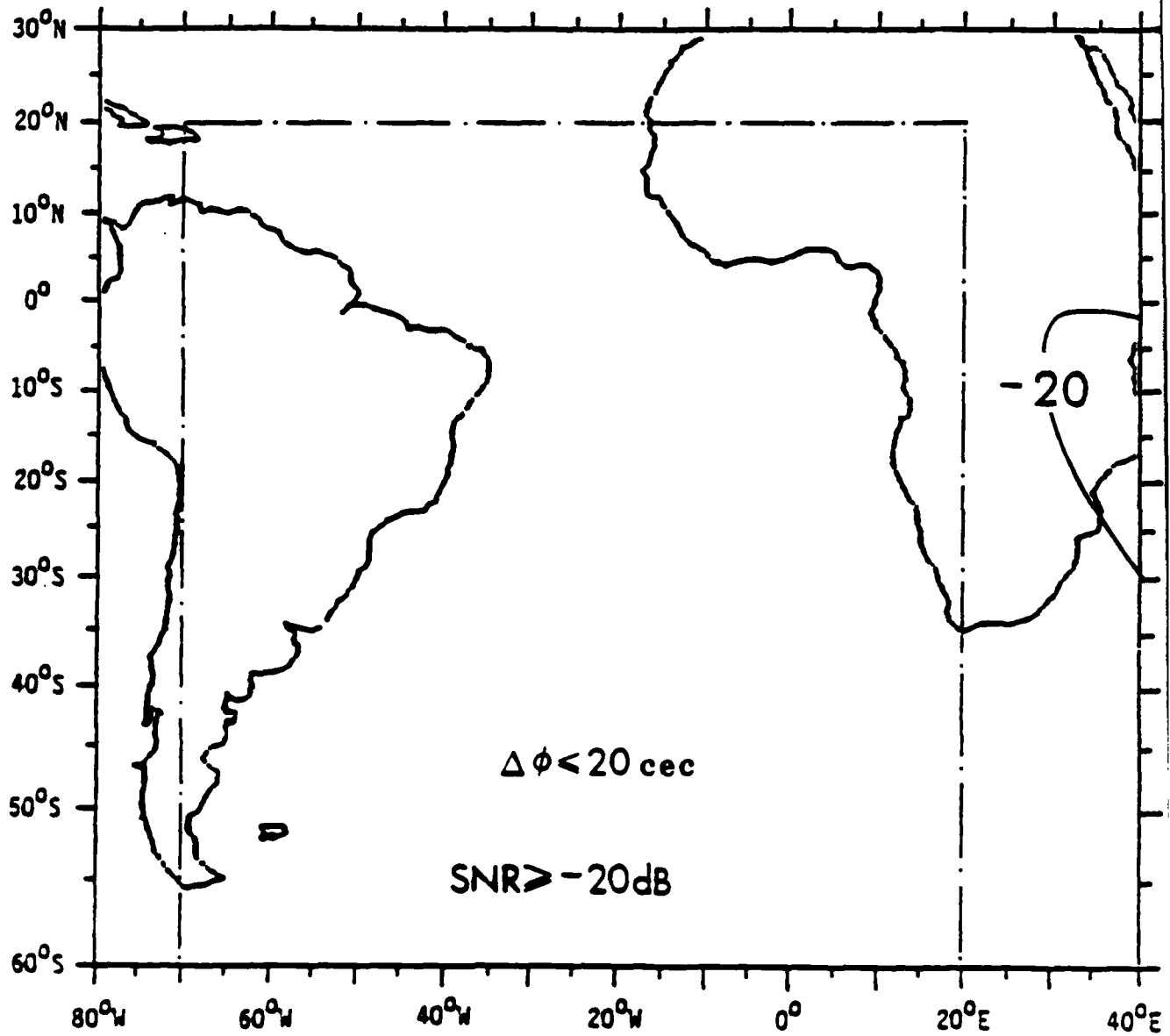
1800 GMT



NORTH DAKOTA (D)

NOVEMBER

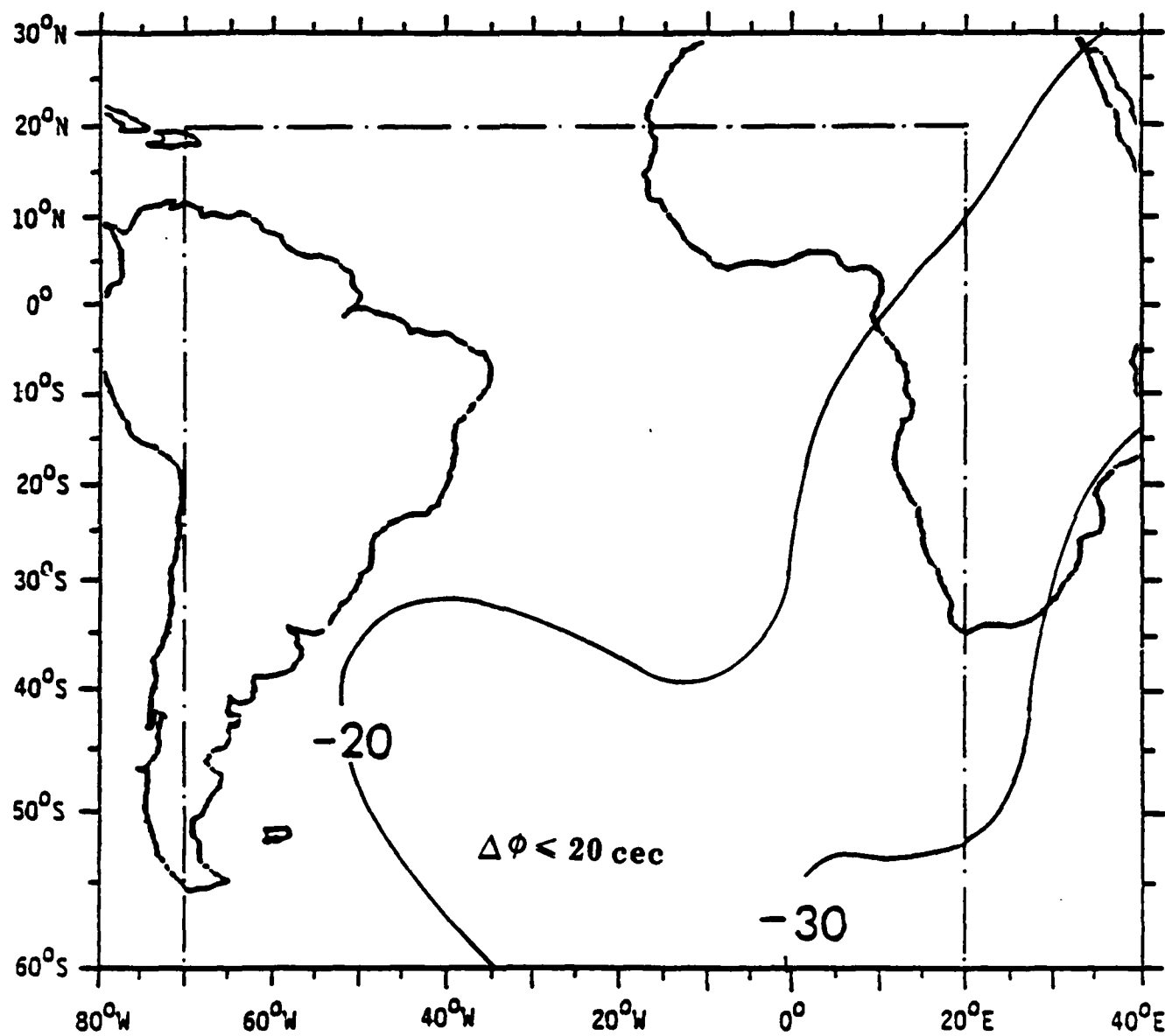
0600 GMT



NORTH DAKOTA (D)

NOVEMBER

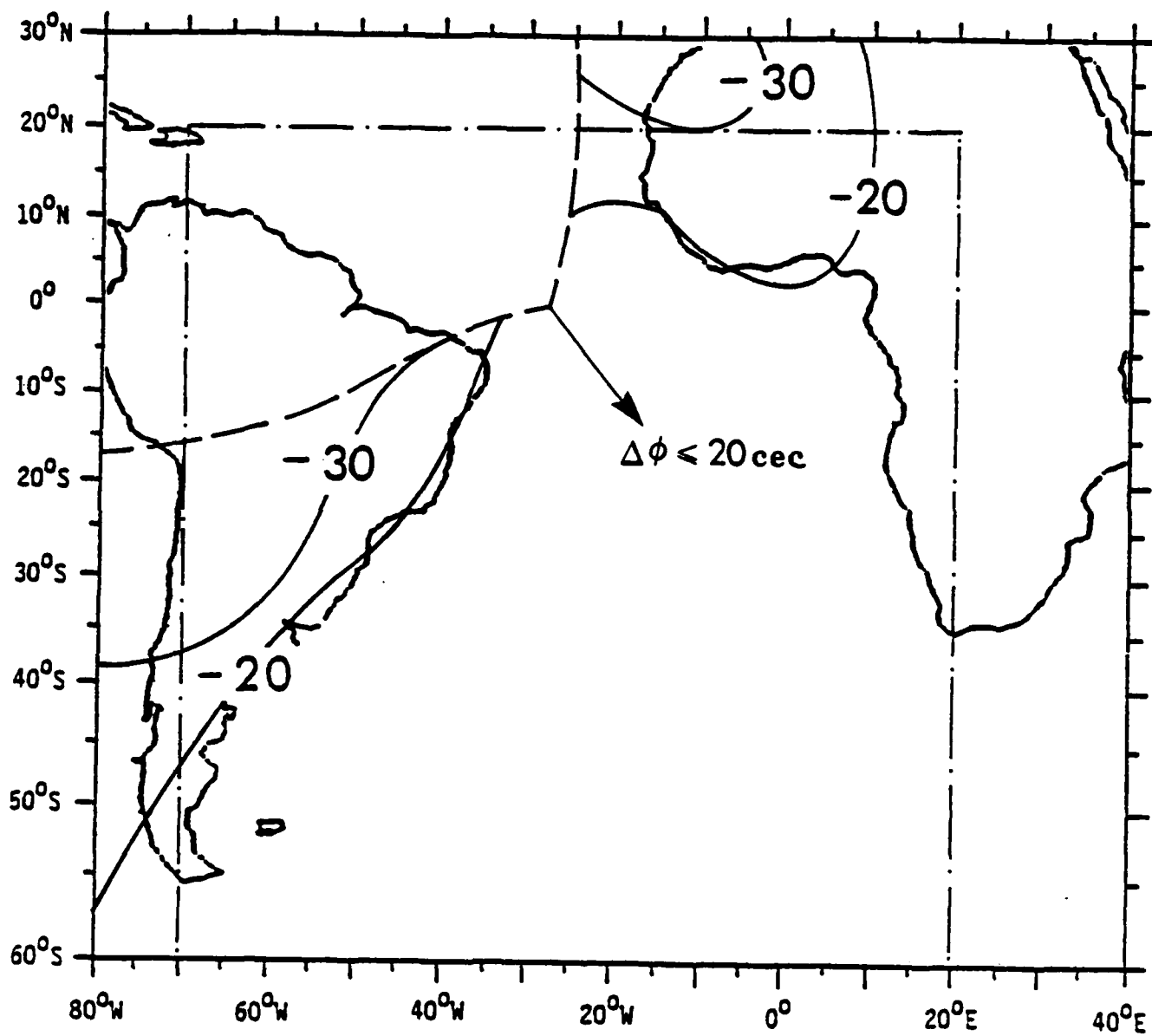
1800 GMT



LA REUNION (E)

FEBRUARY

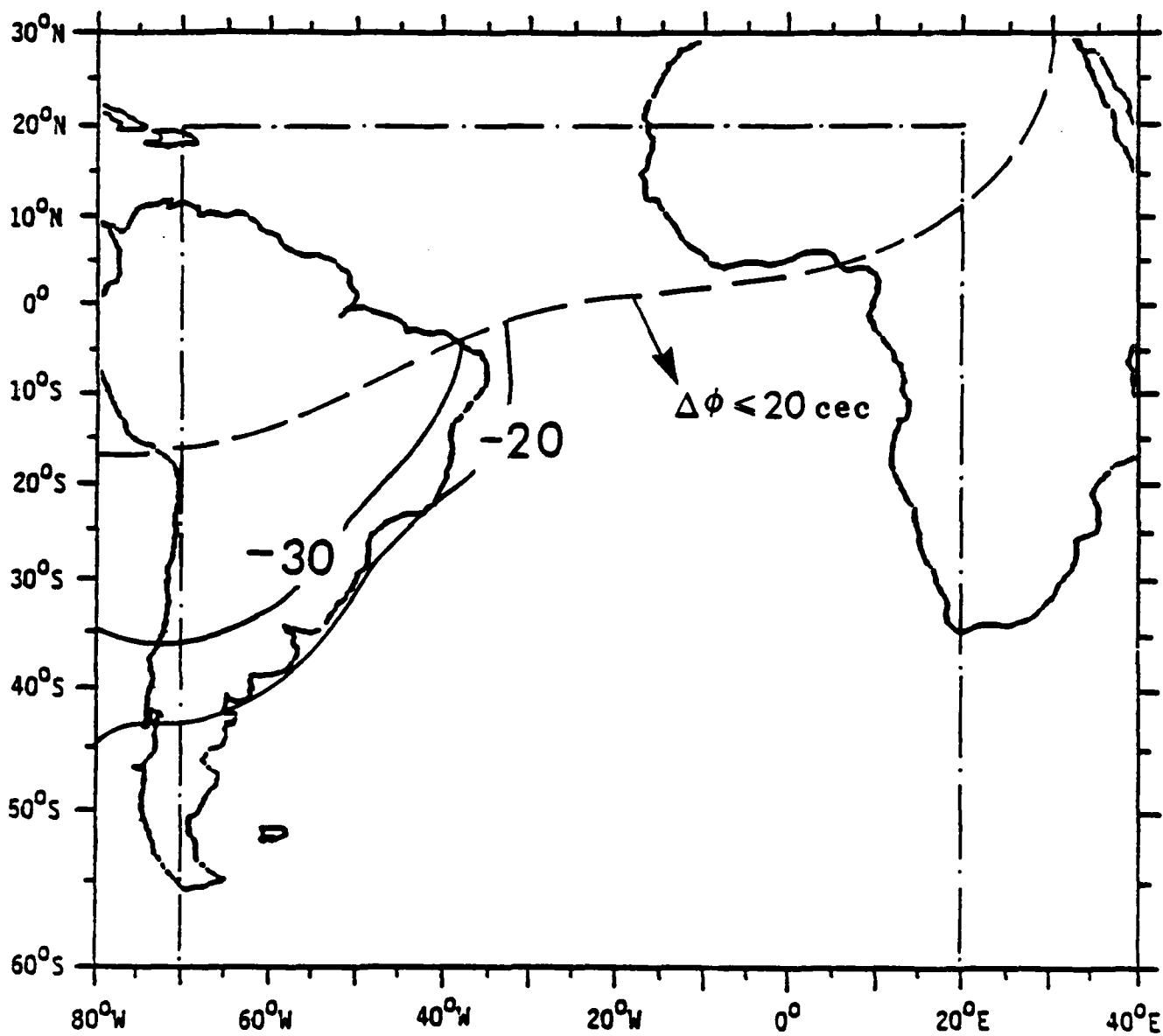
0600 GMT



LA REUNION (E)

FEBRUARY

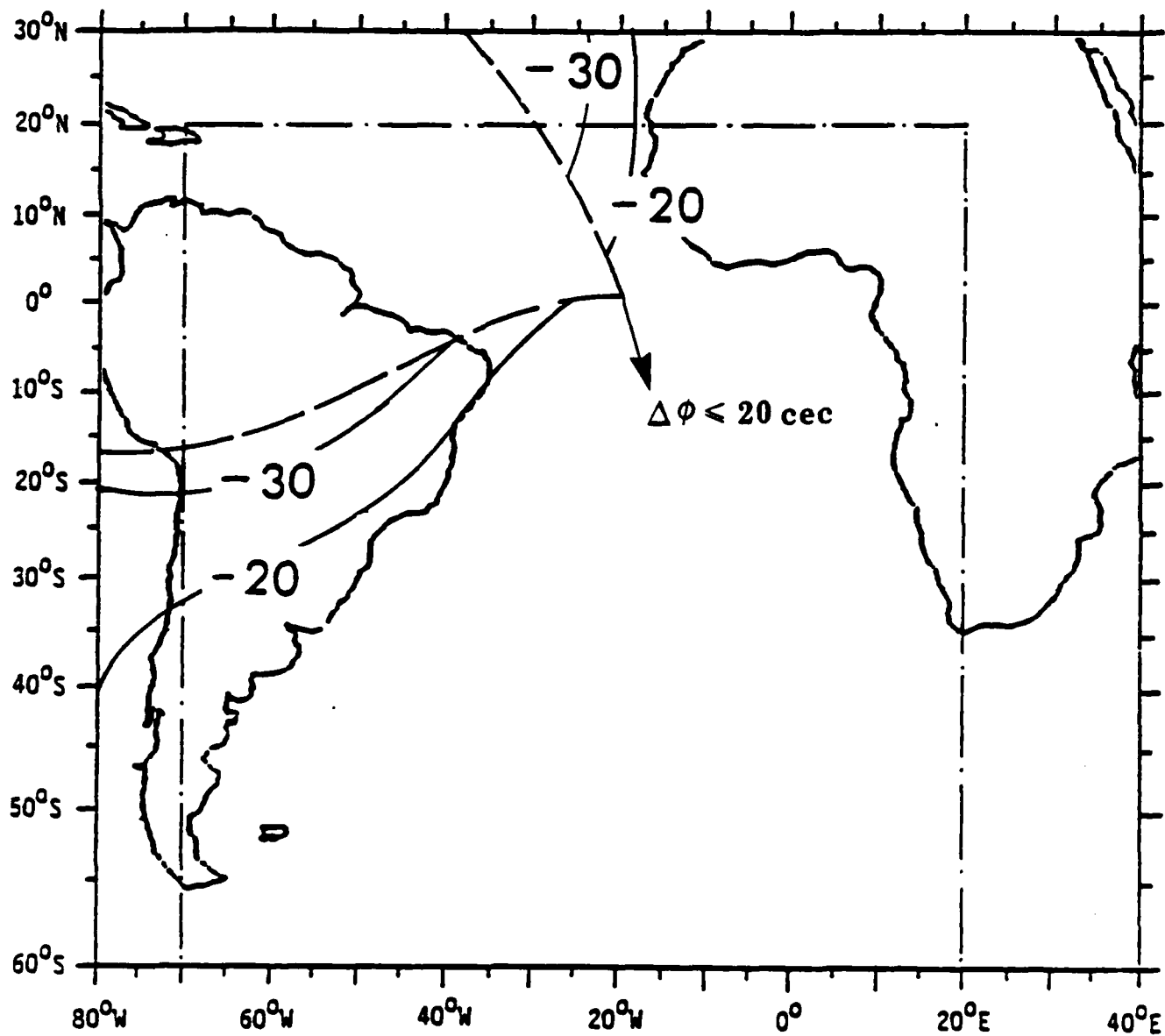
1800 GMT



LA REUNION (E)

MAY

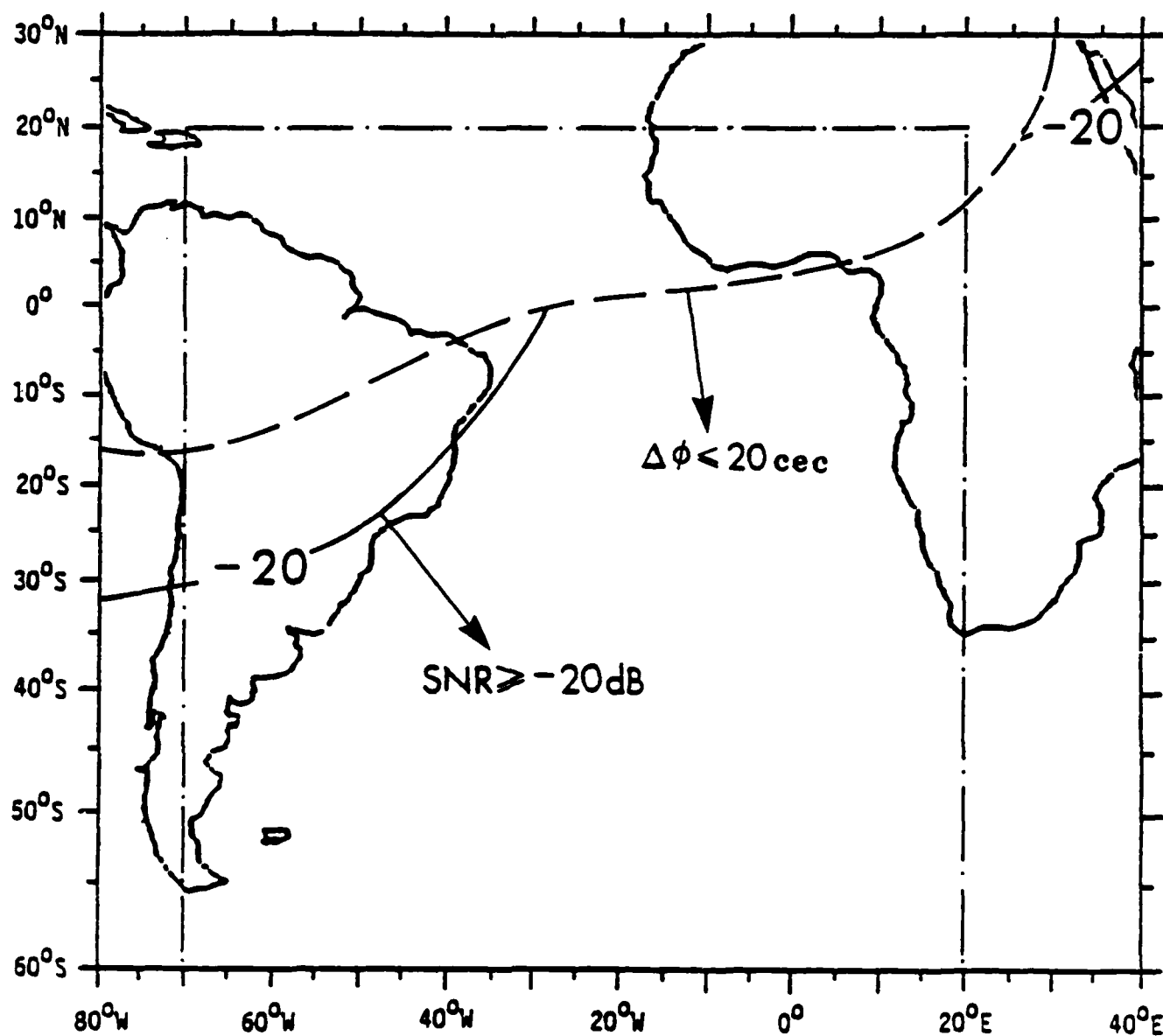
0600 GMT



LA REUNION (E)

MAY

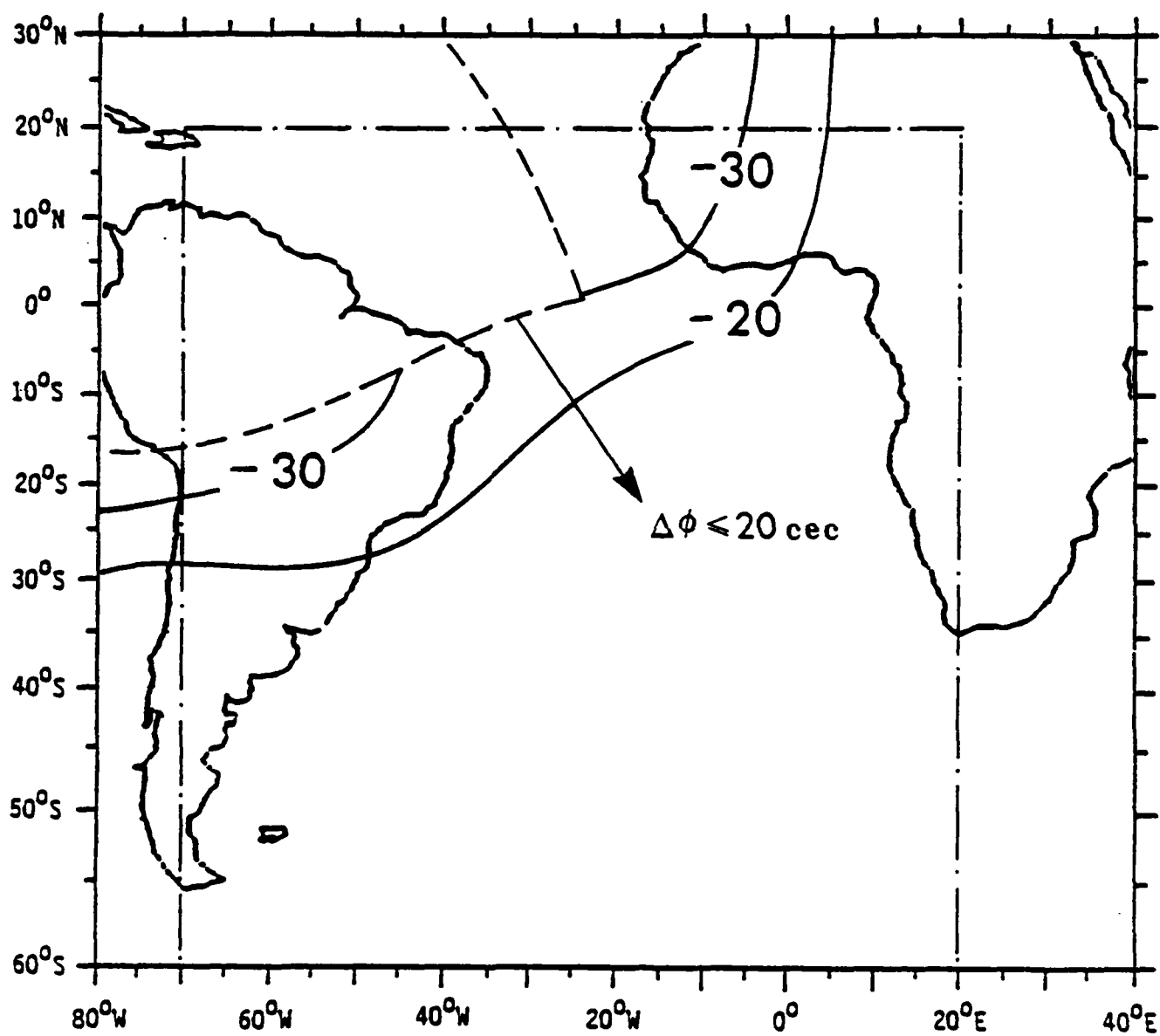
1800 GMT



LA REUNION (E)

AUGUST

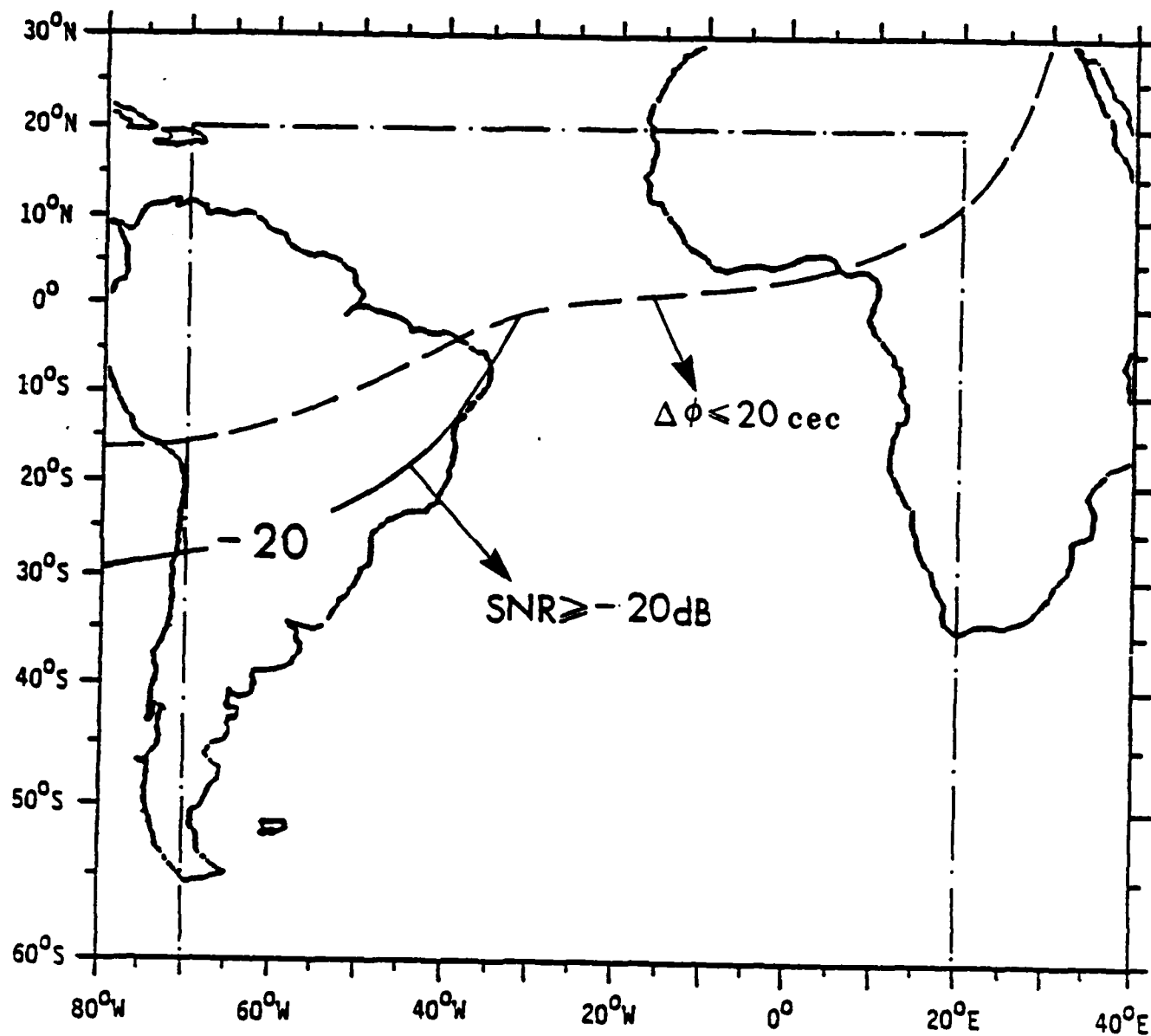
0600 GMT



LA REUNION (E)

AUGUST

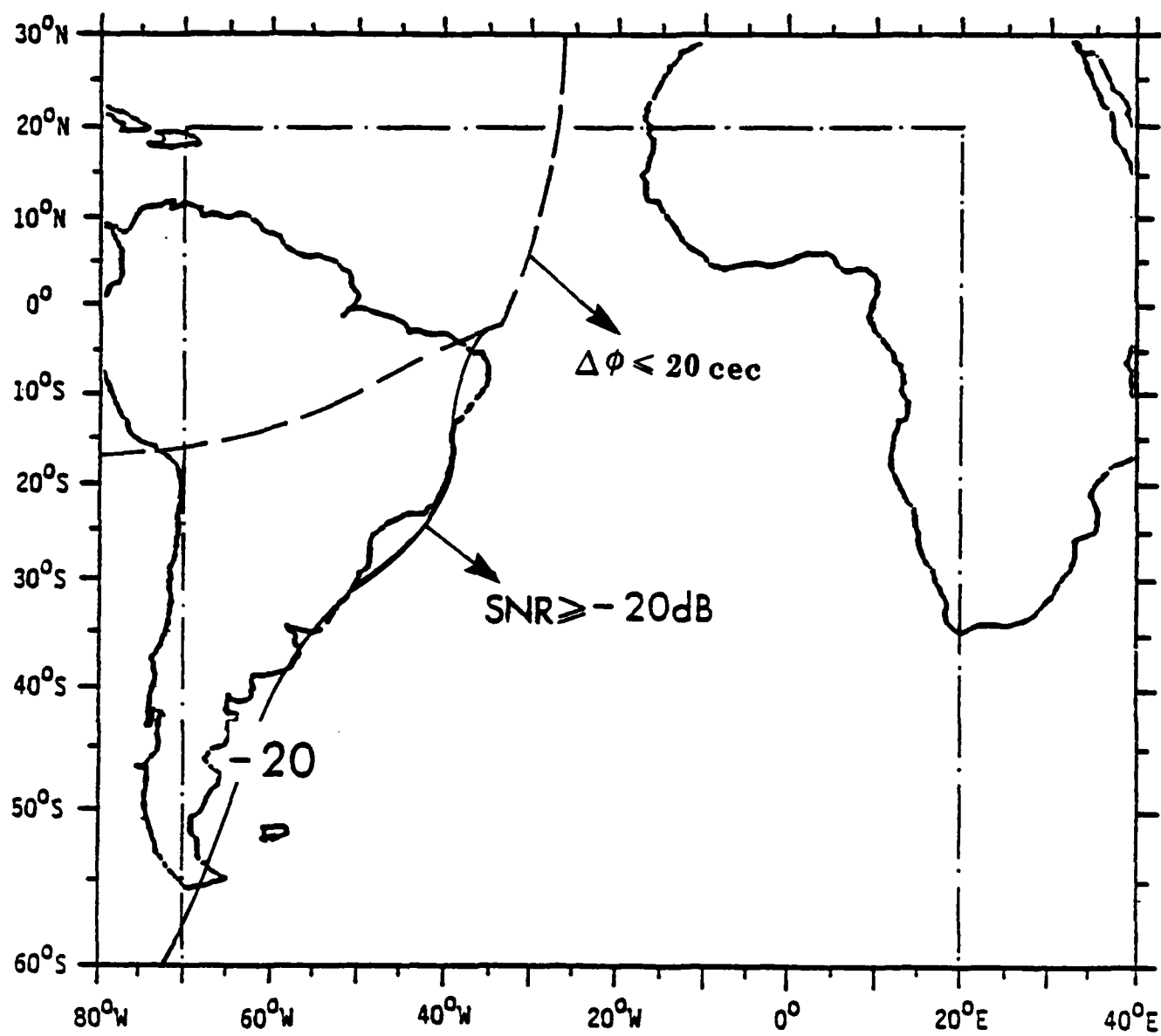
1800 GMT



LA REUNION (E)

NOVEMBER

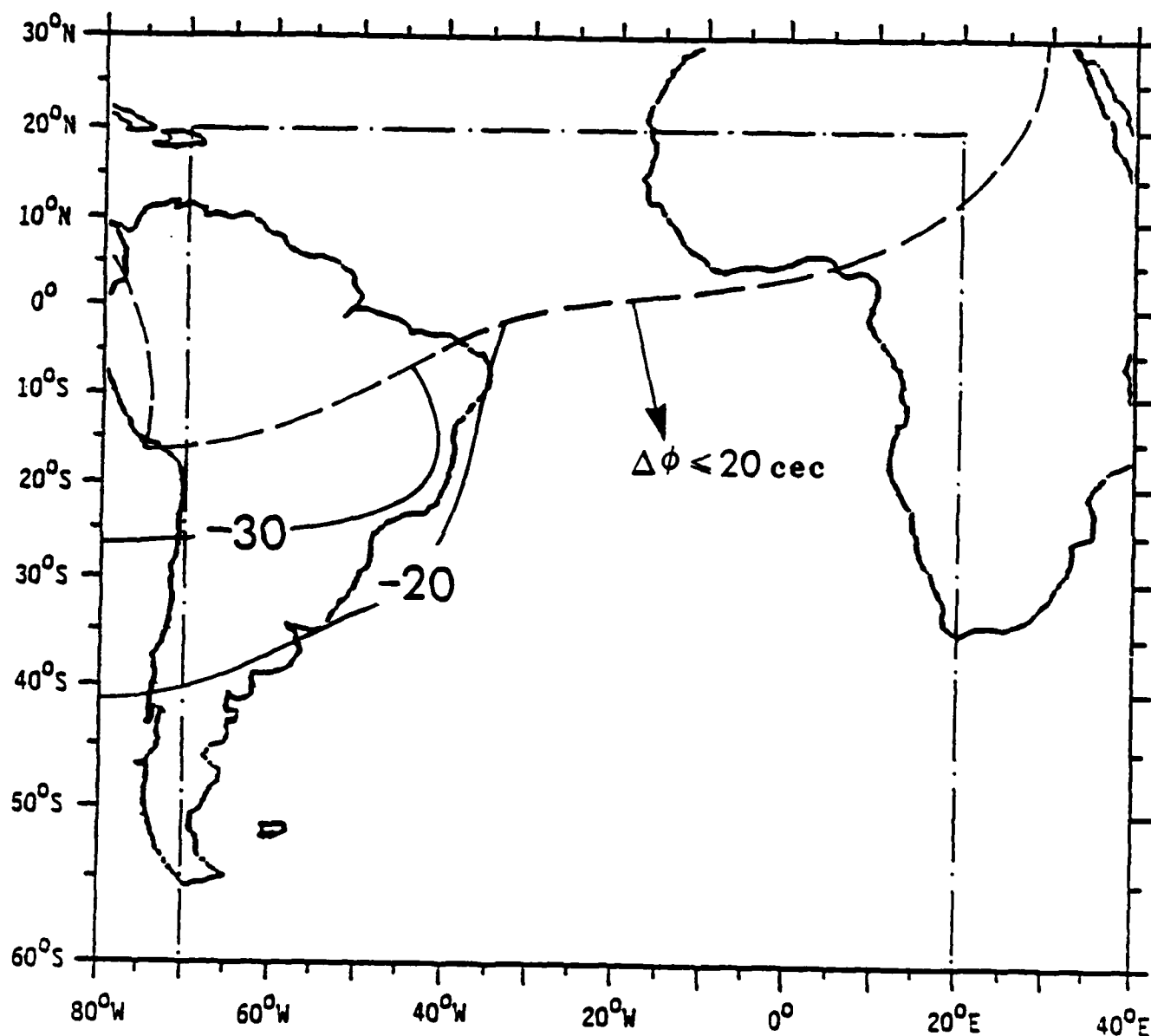
0600 GMT



LA REUNION (E)

NOVEMBER

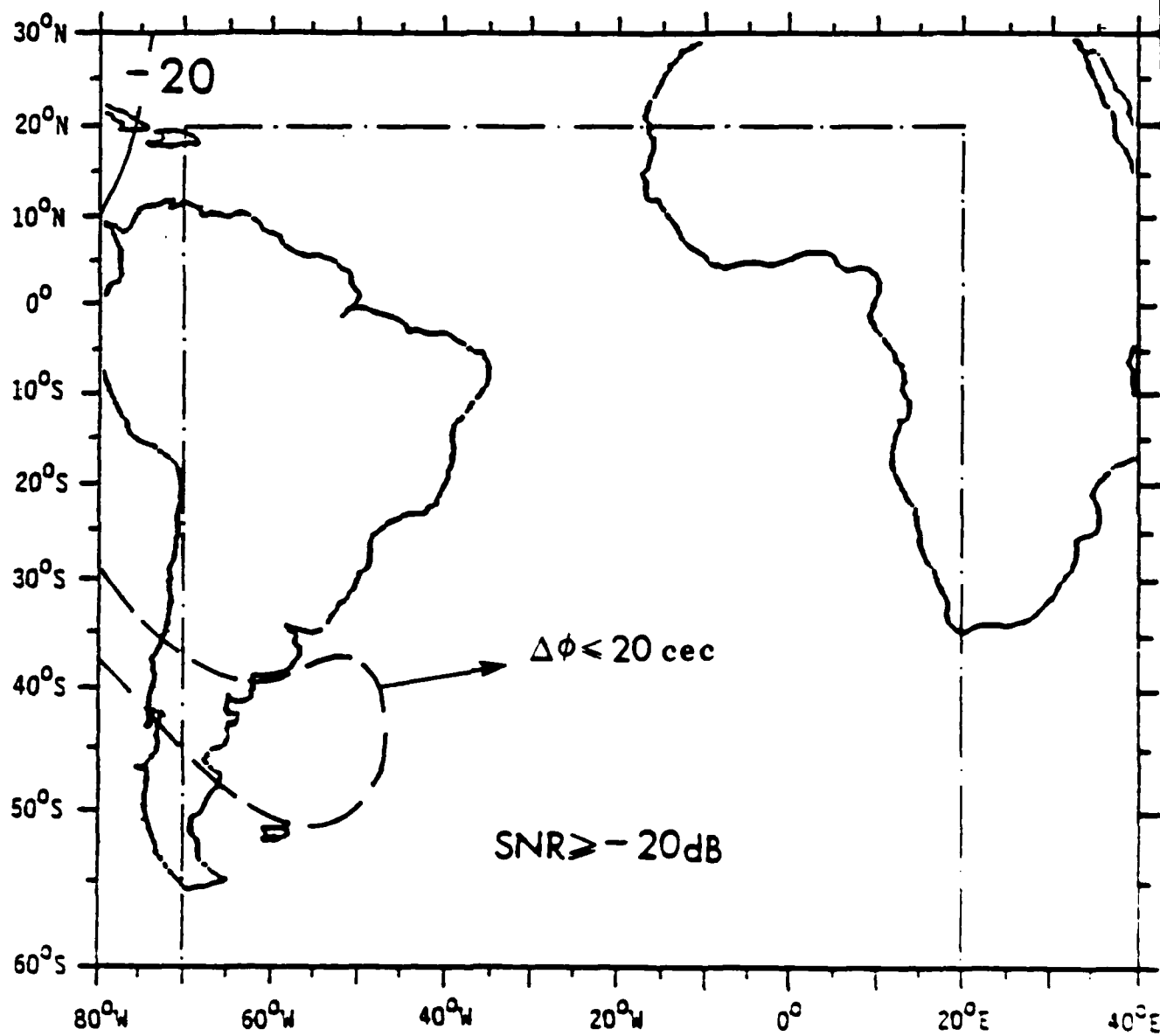
1800 GMT



ARGENTINA (F)

FEBRUARY

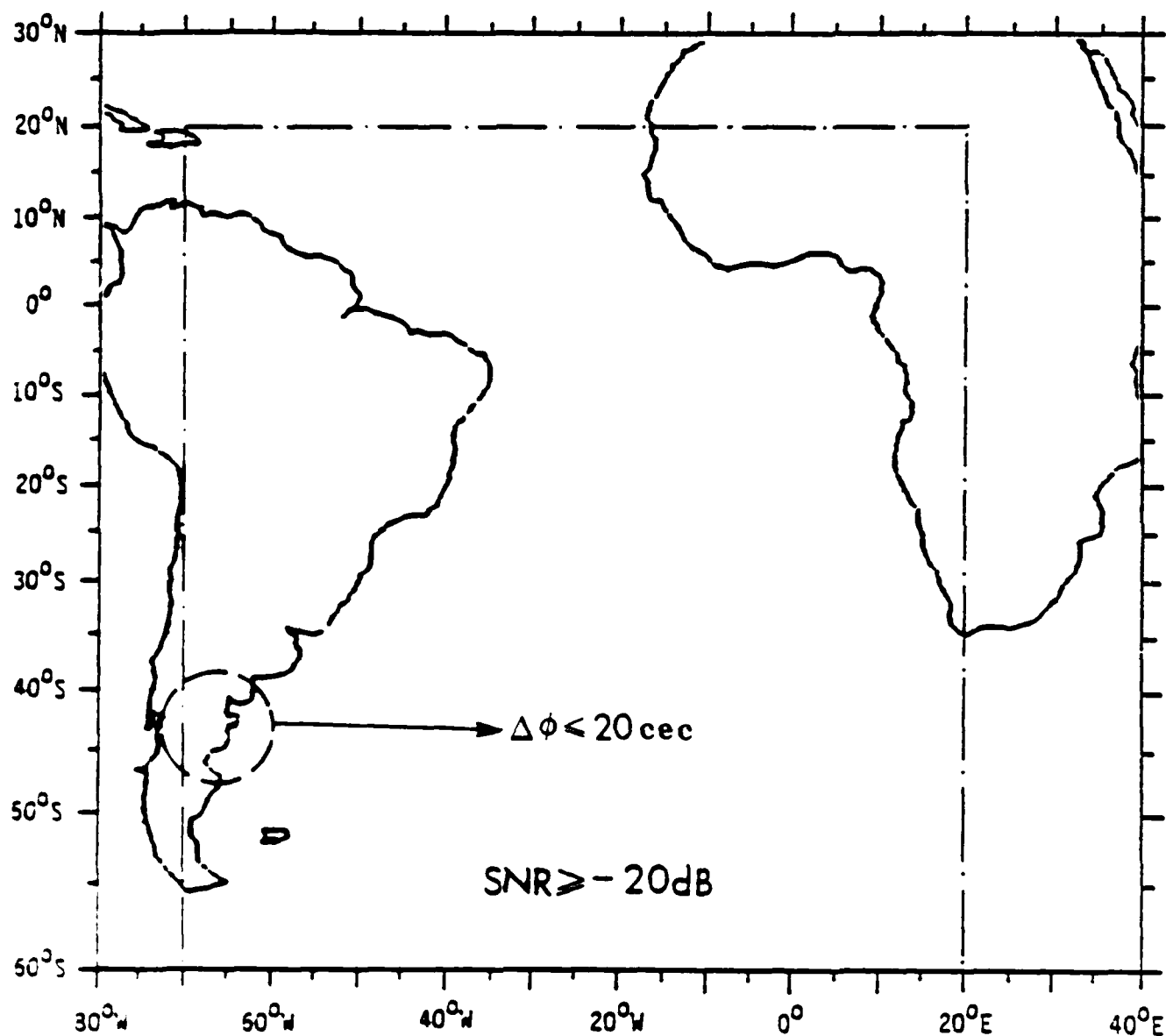
0600 GMT



ARGENTINA (F)

FEBRUARY

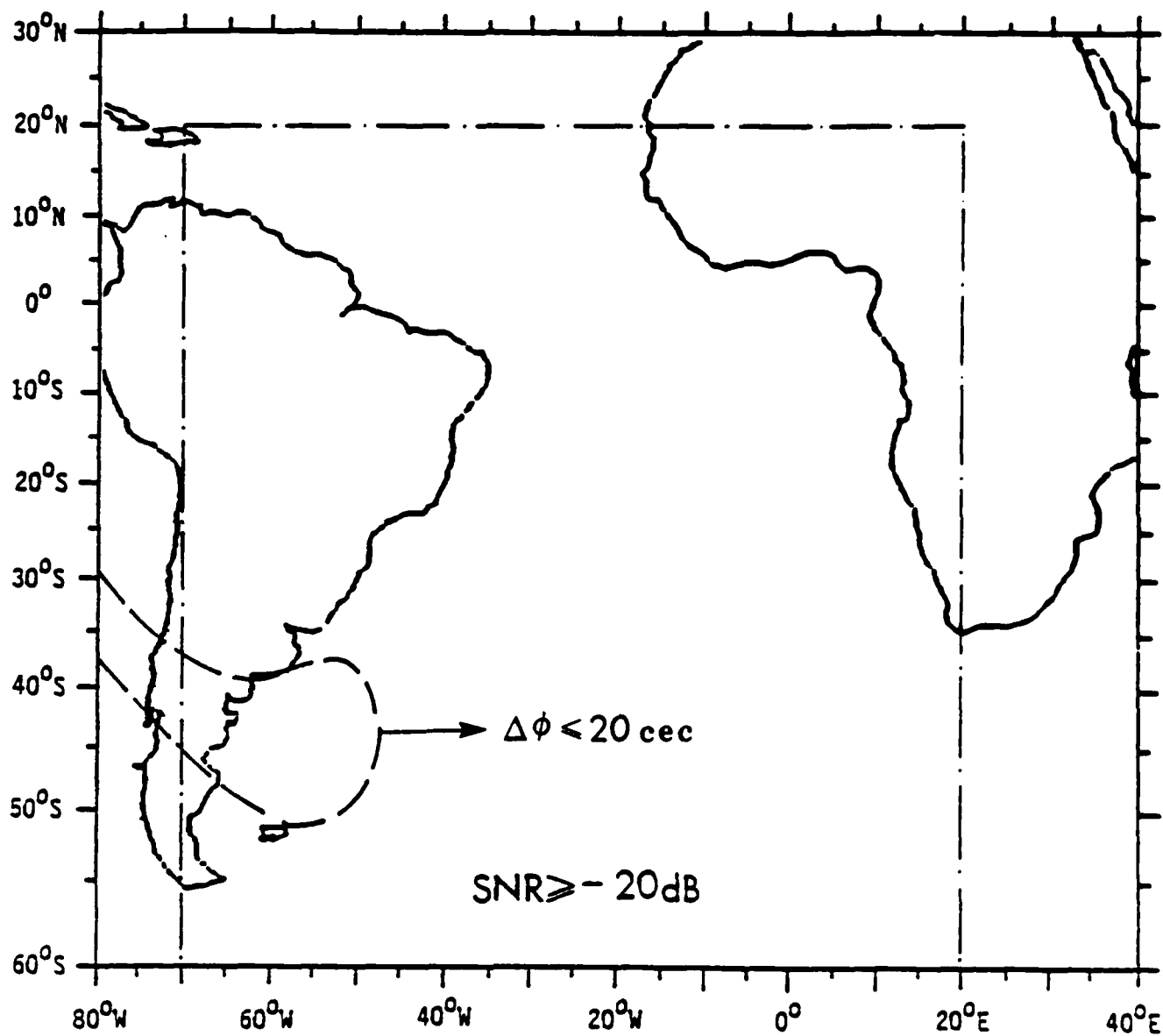
1800 GMT



ARGENTINA (F)

MAY

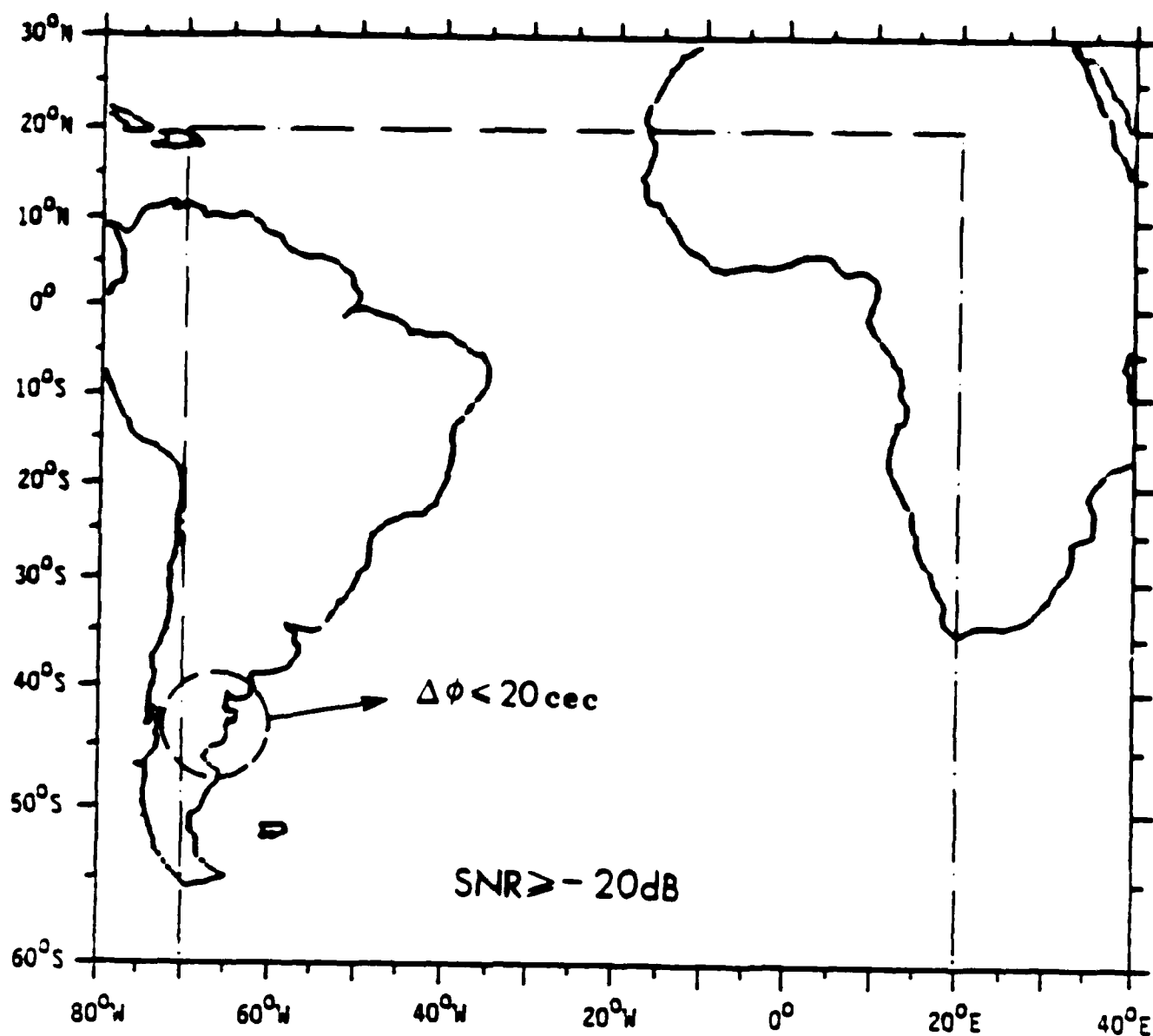
0600 GMT



ARGENTINA (F)

MAY

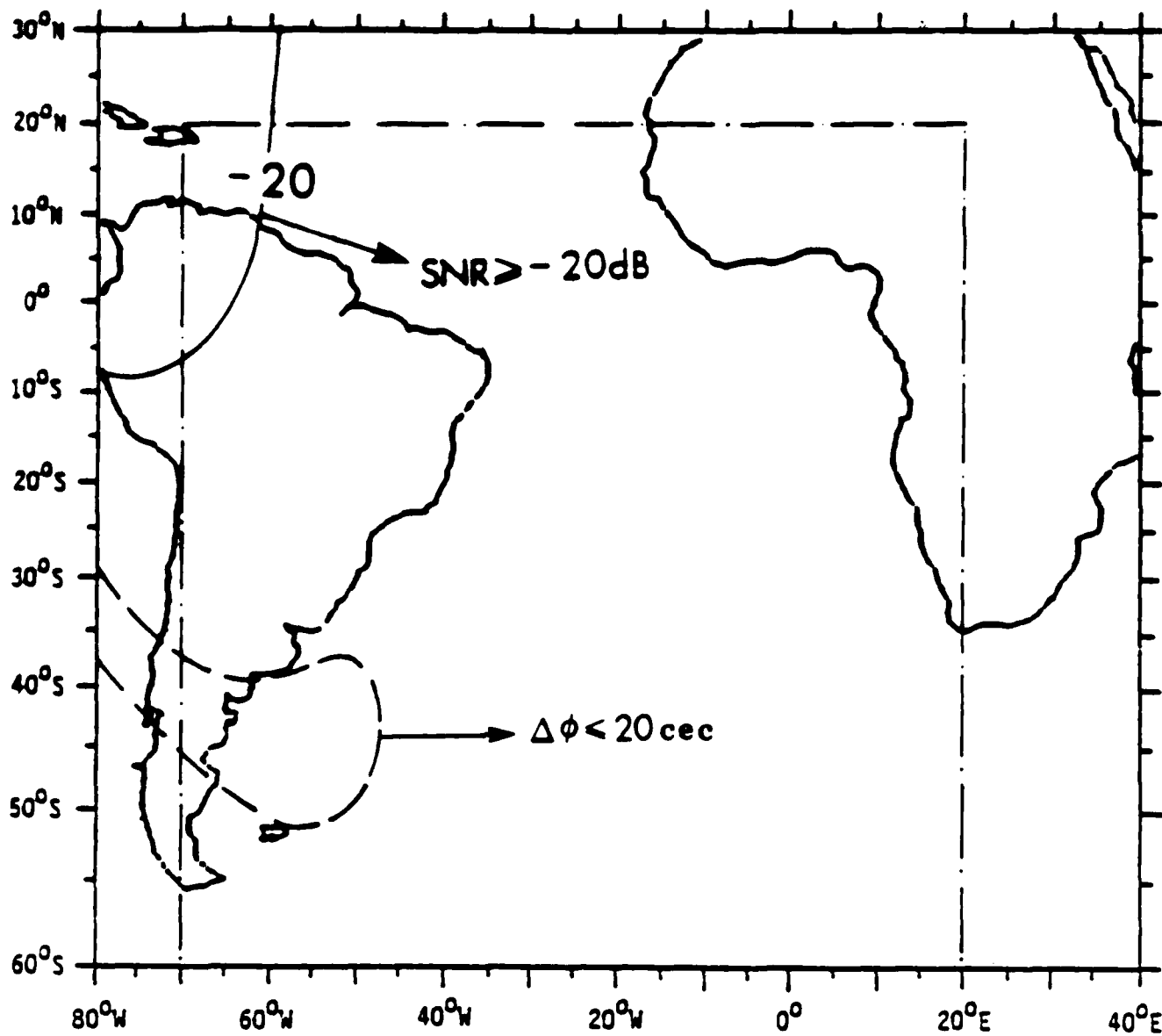
1800 GMT



ARGENTINA (F)

AUGUST

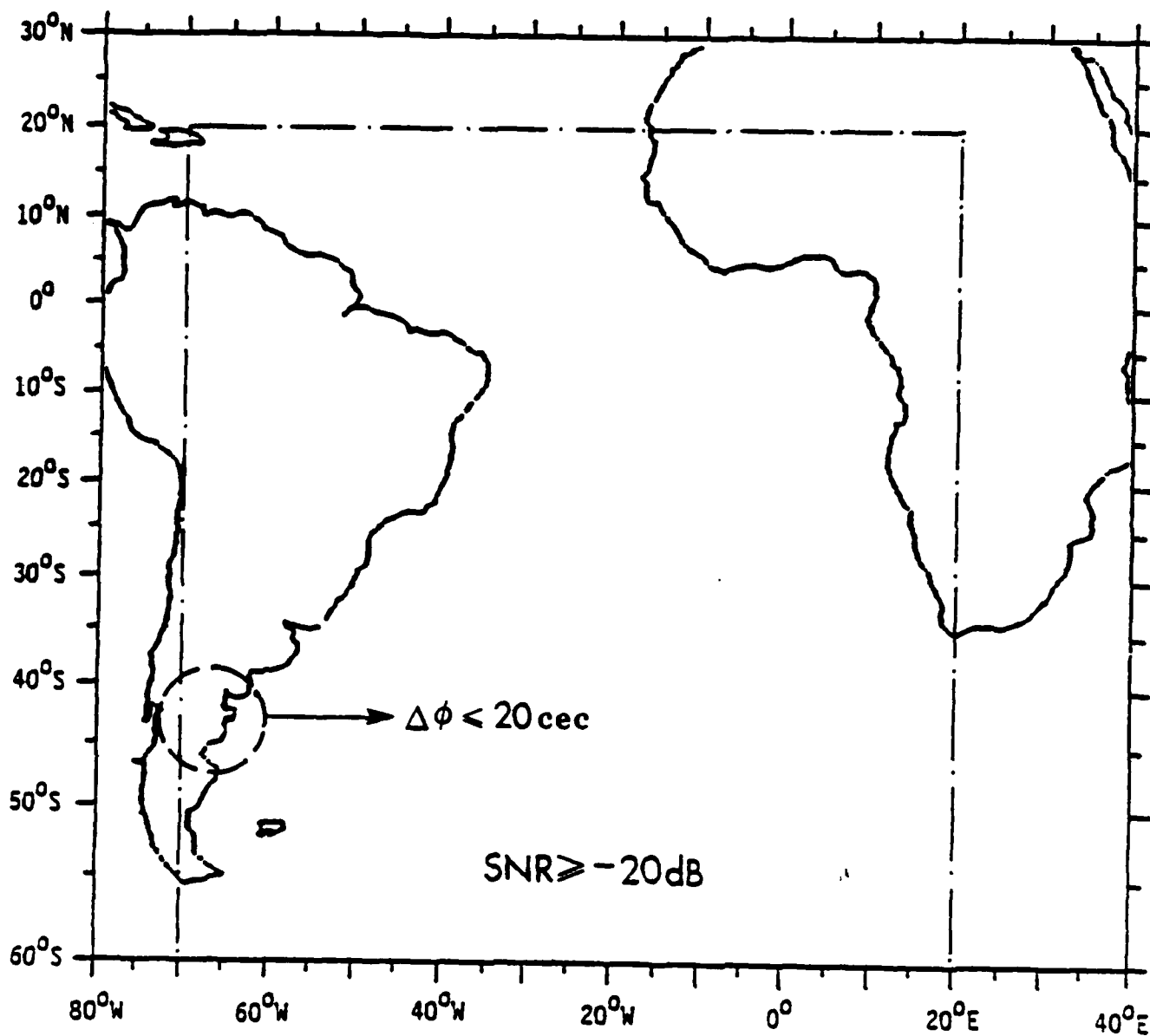
0600 GMT



ARGENTINA (F)

AUGUST

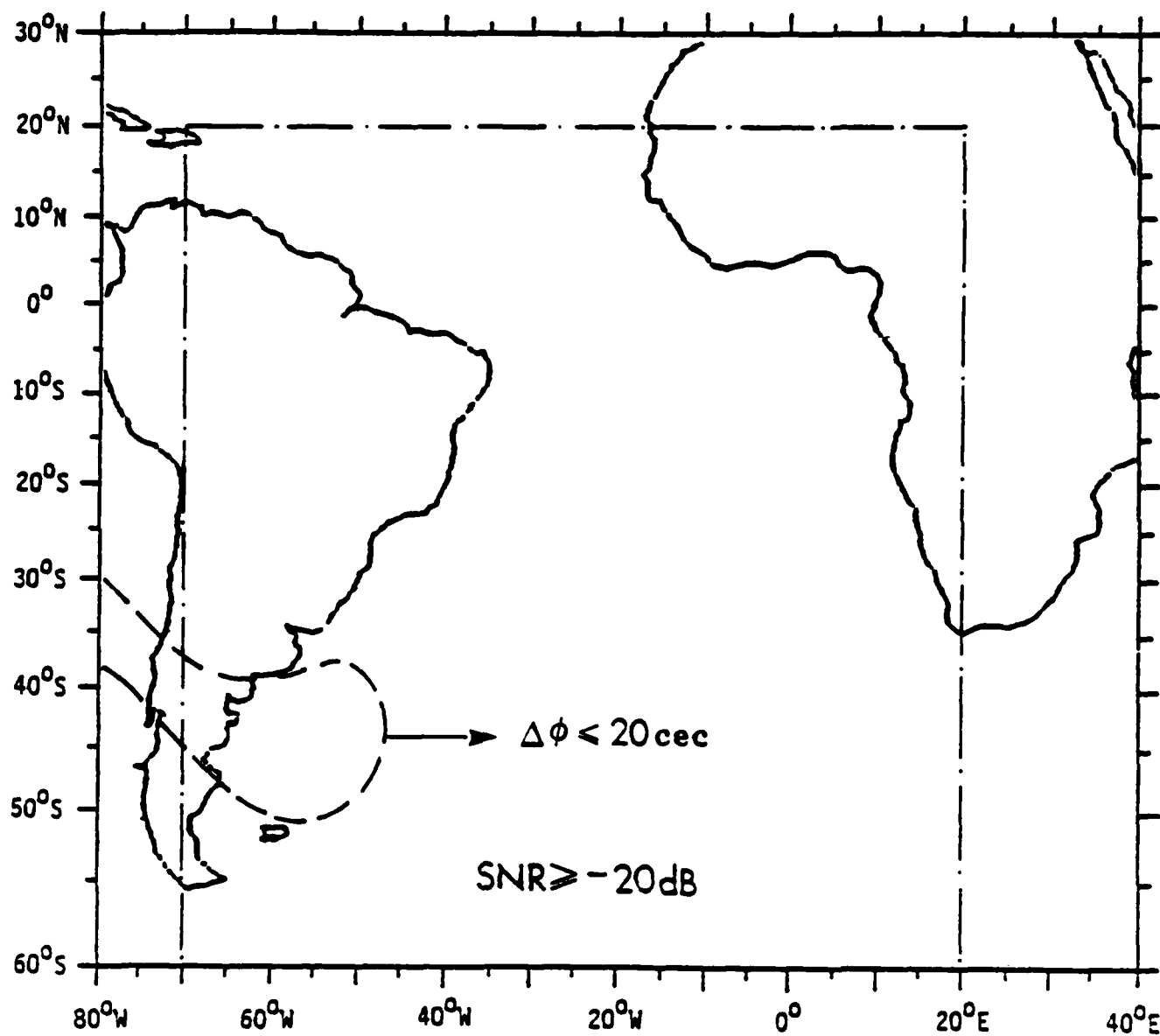
1800 GMT



ARGENTINA (F)

NOVEMBER

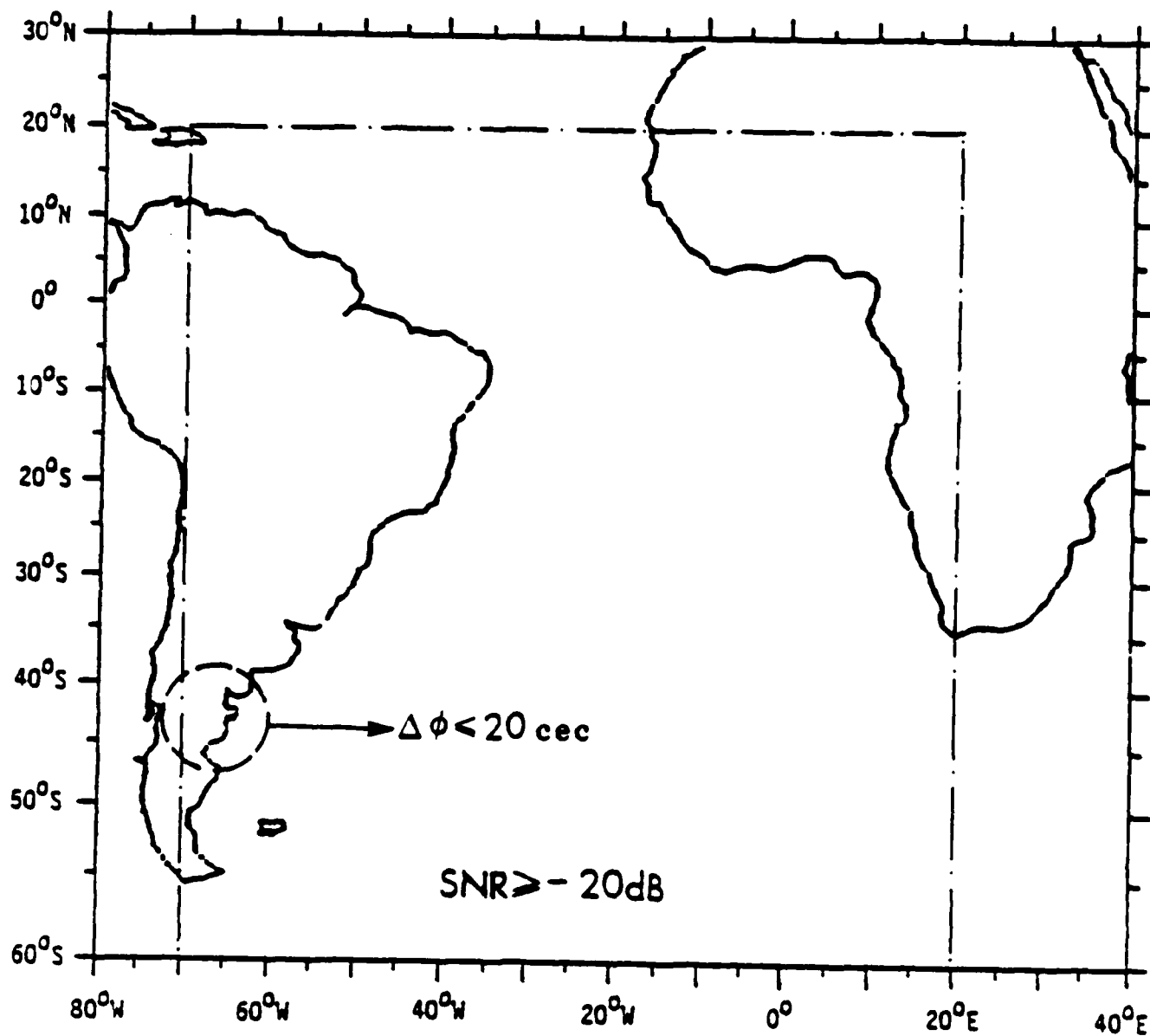
0600 GMT



ARGENTINA (F)

NOVEMBER

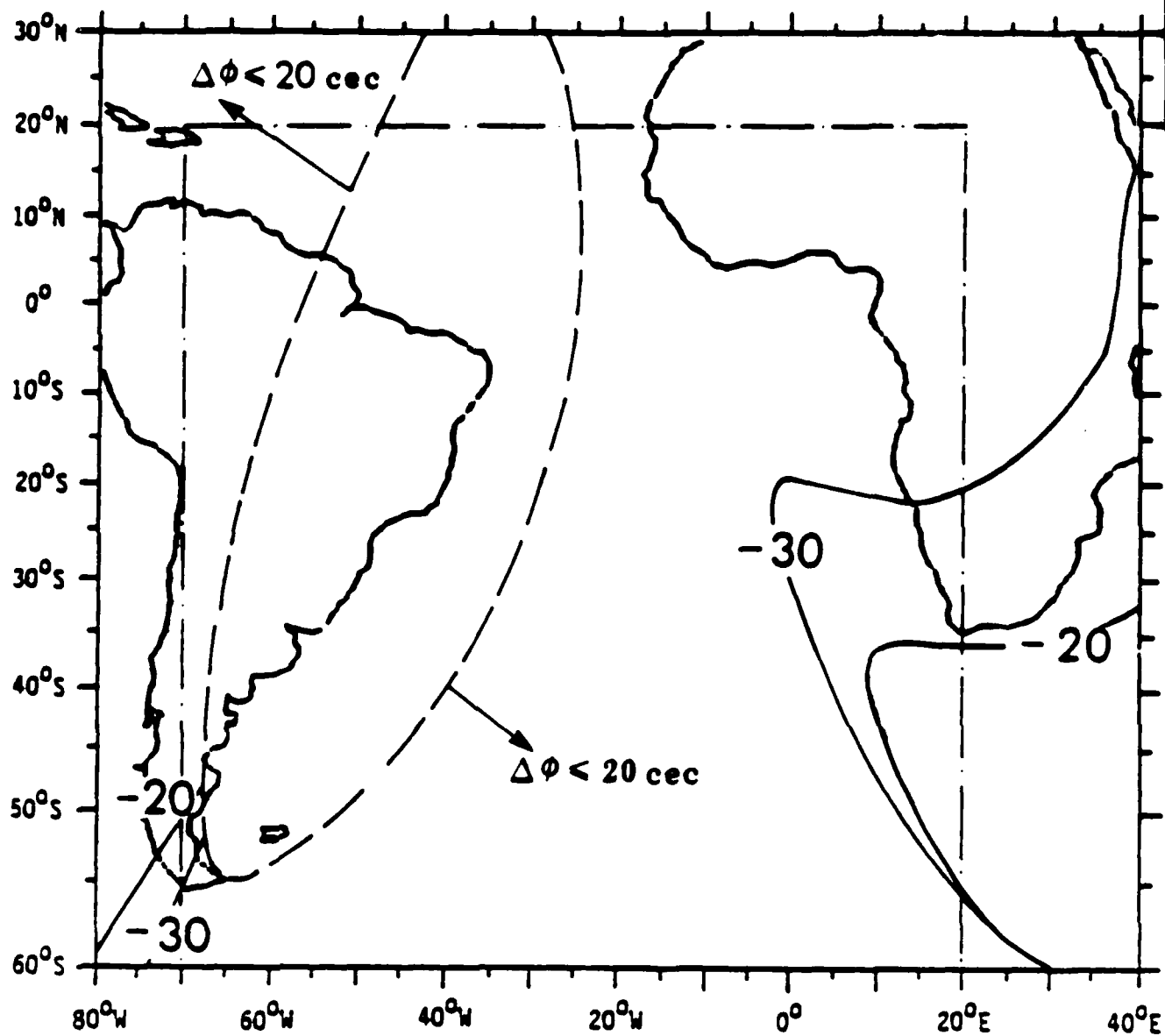
1800 GMT



AUSTRALIA (G)

FEBRUARY

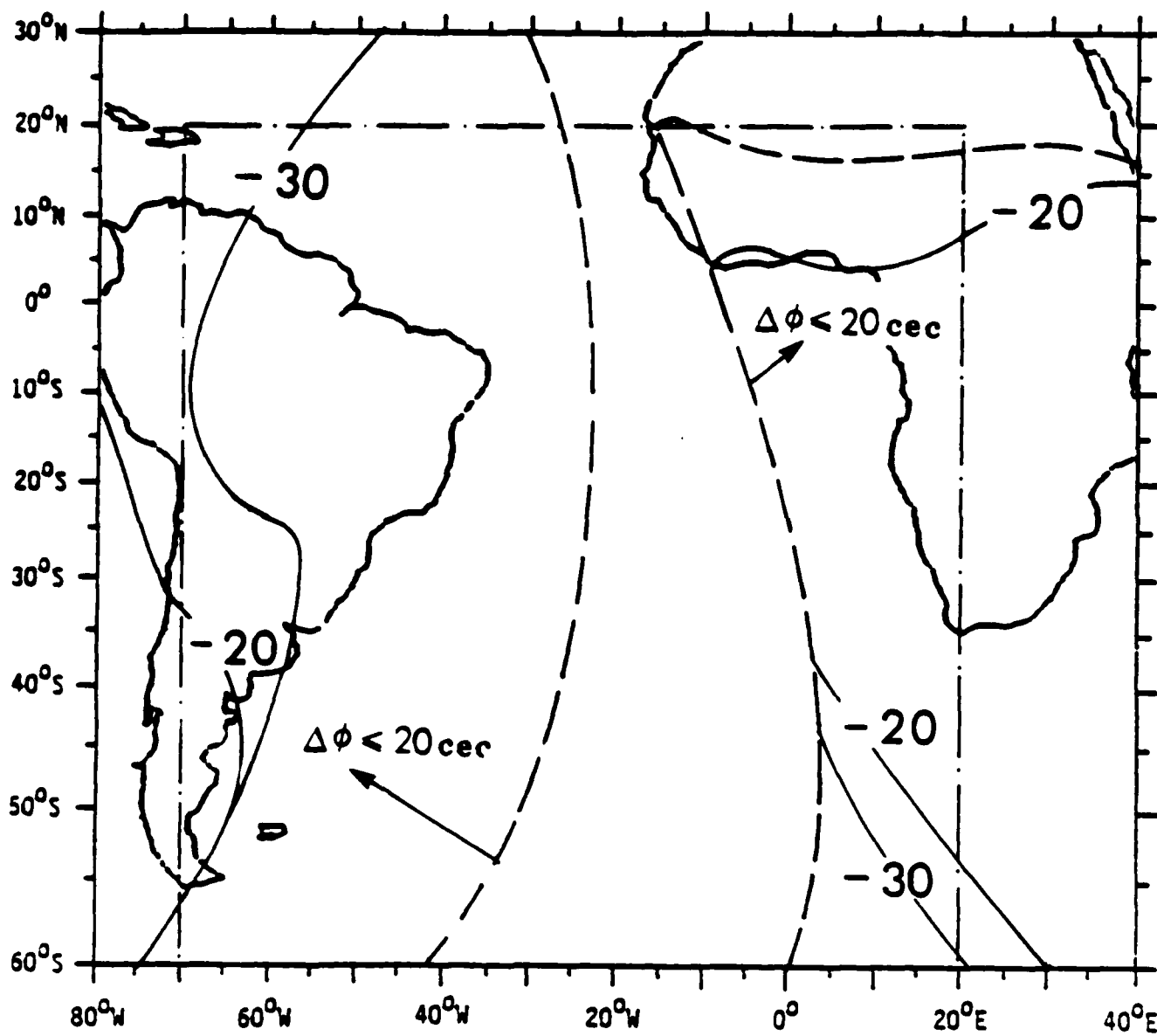
0600 GMT



AUSTRALIA (G)

FEBRUARY

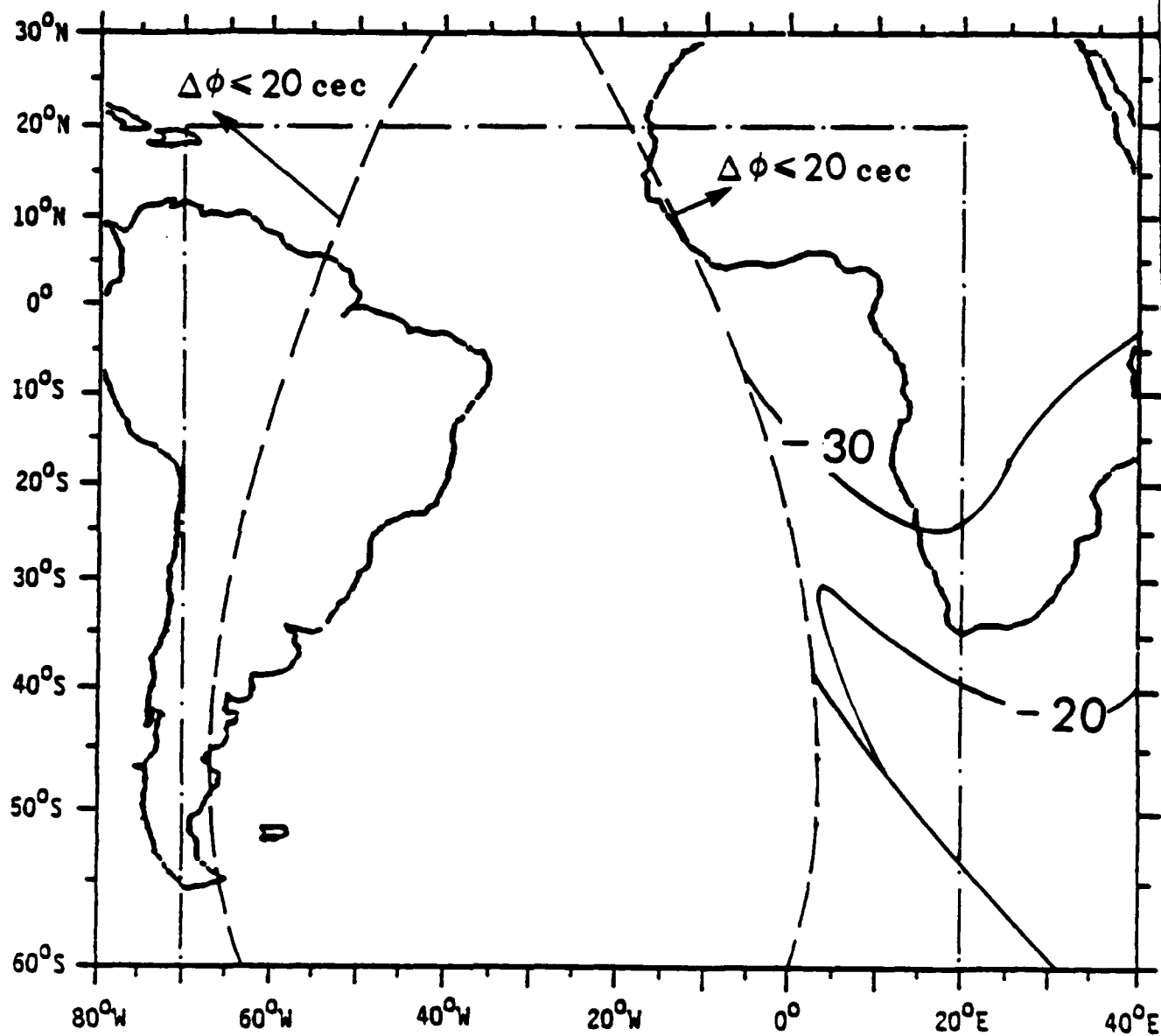
1800 GMT



AUSTRALIA (G)

MAY

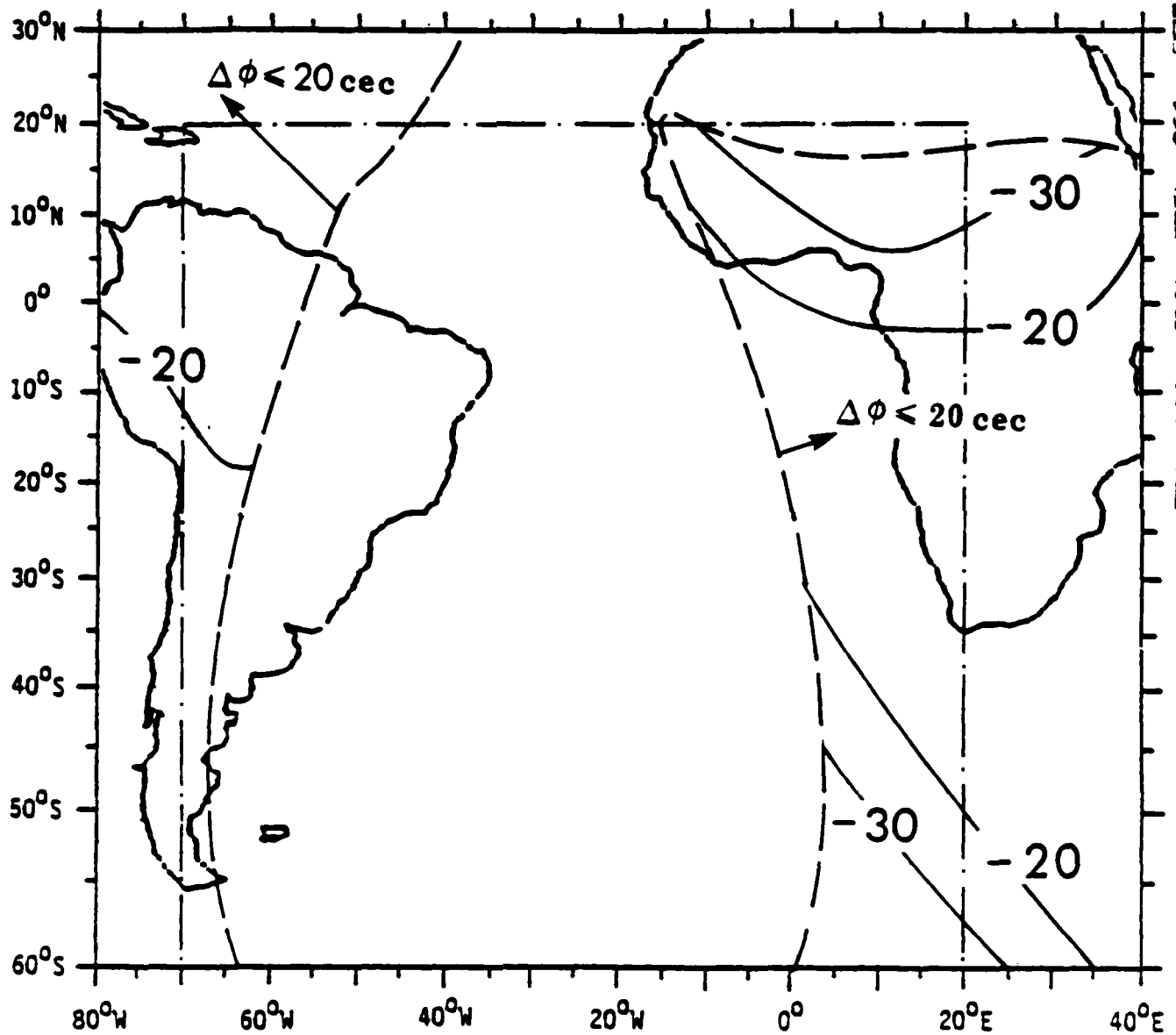
0600 GMT



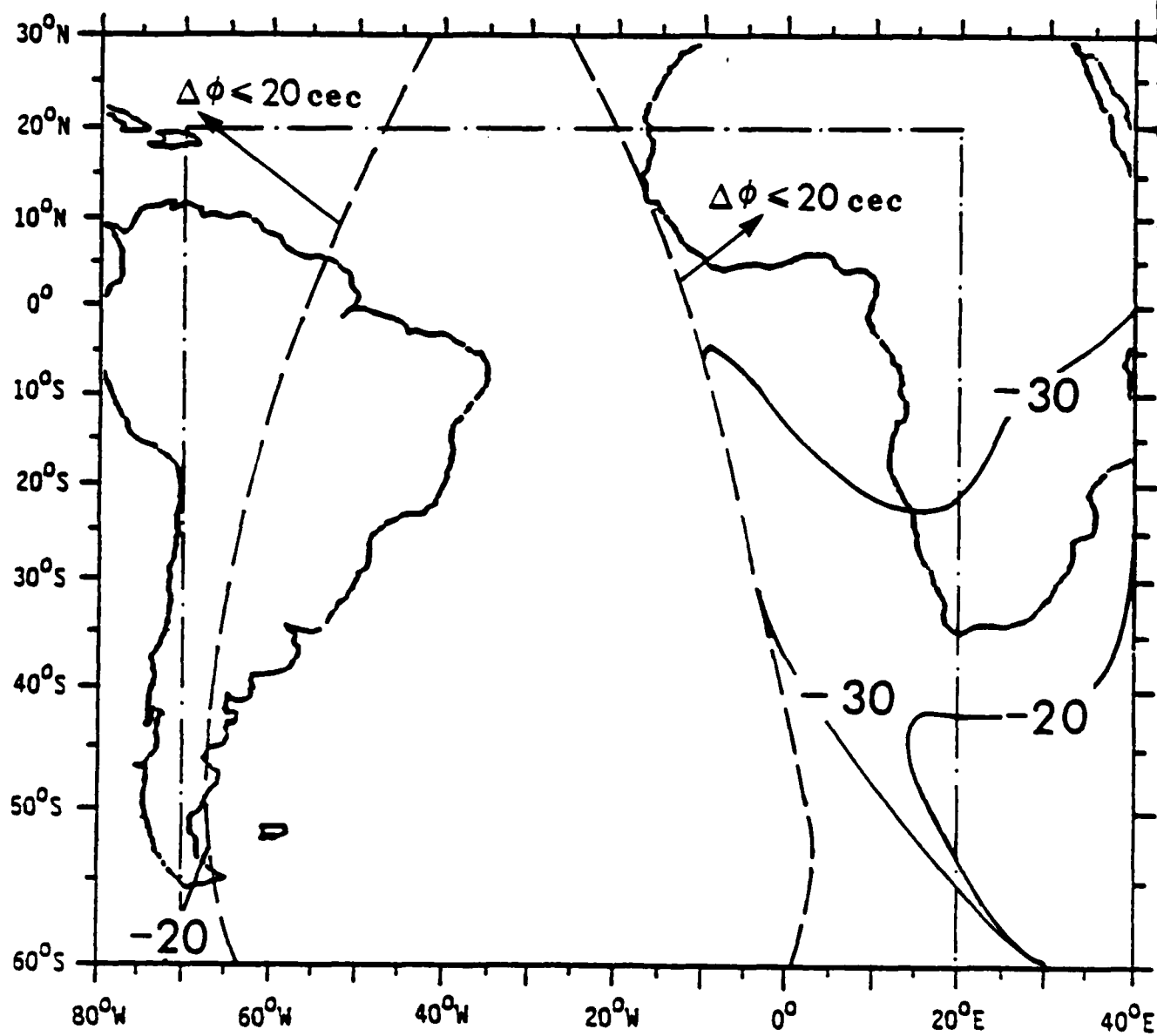
AUSTRALIA (G)

MAY

1800 GMT



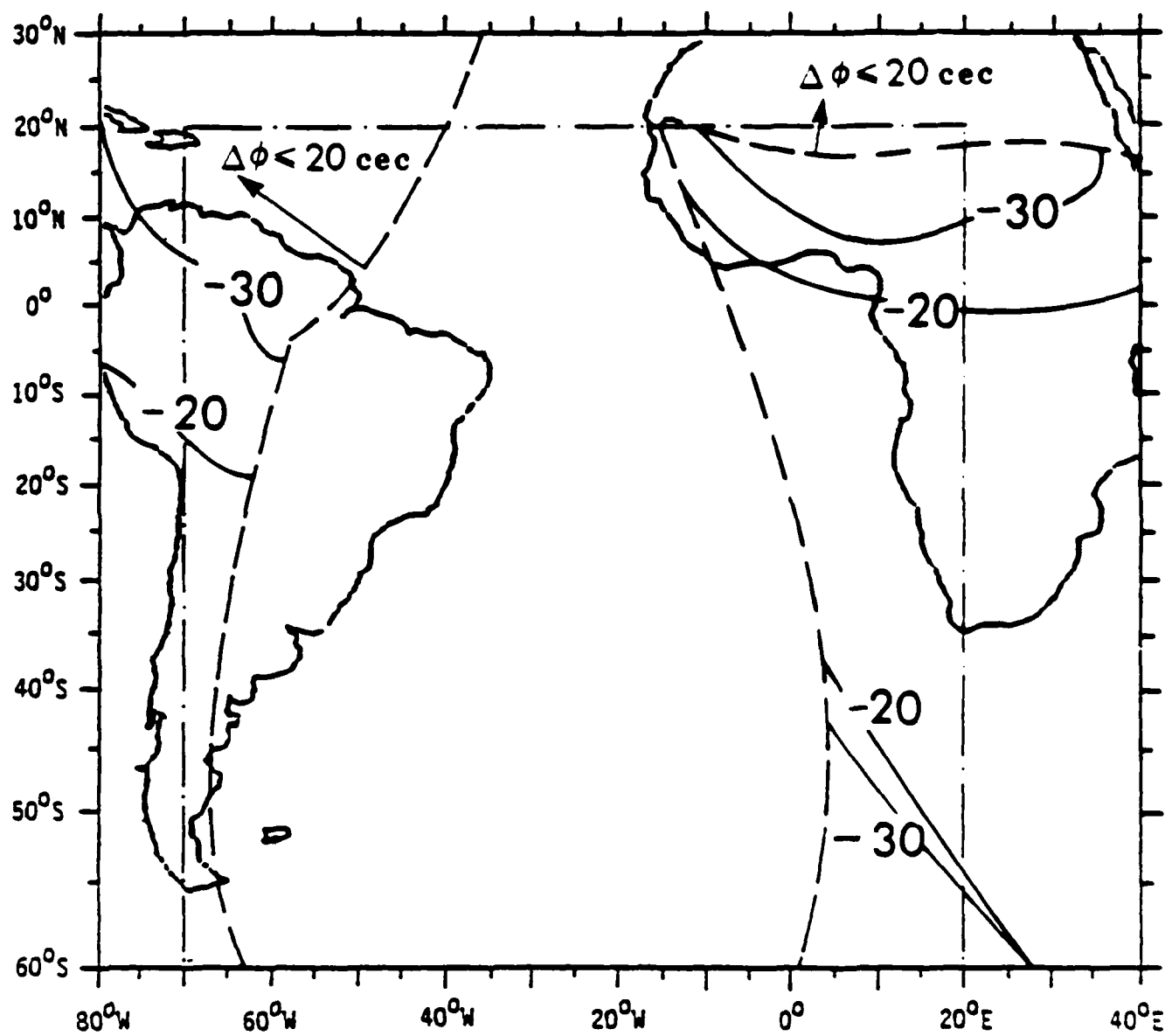
0600 CMT



AUSTRALIA (G)

AUGUST

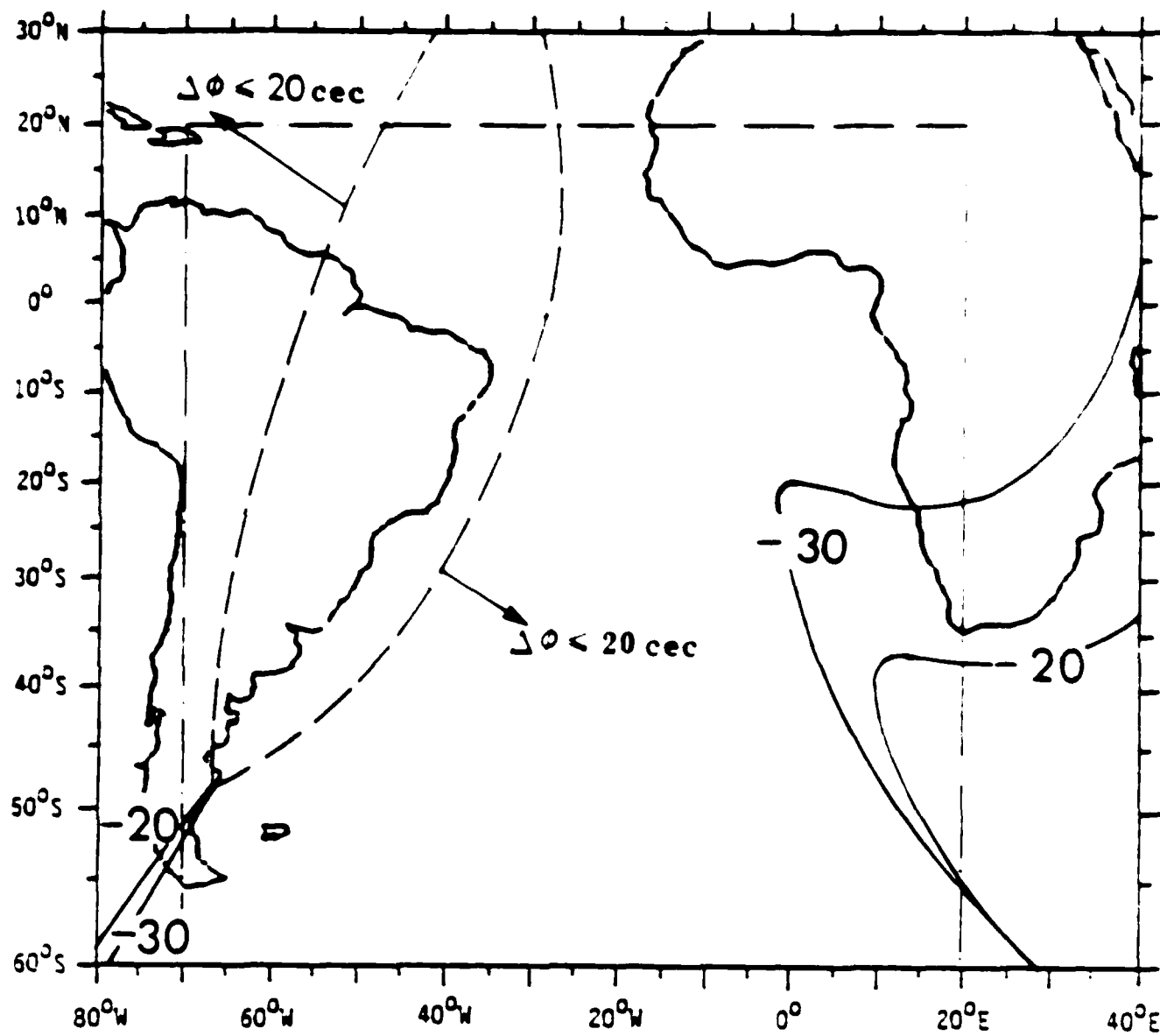
1800 GM1



AUSTRALIA (G)

NOVEMBER

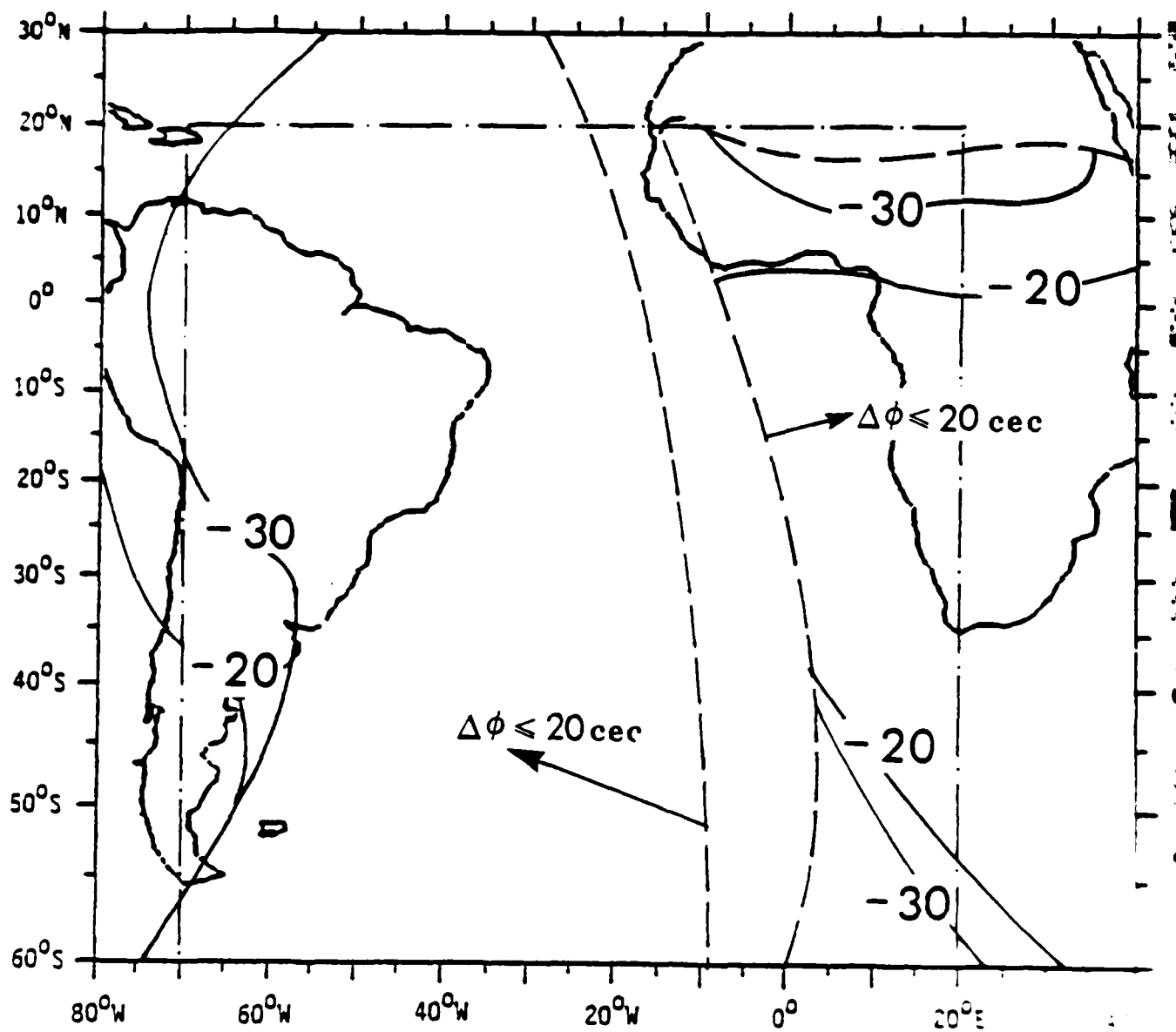
0600 GMT



AUSTRALIA (G)

NOVEMBER

1800 GMT



AD-A181 435

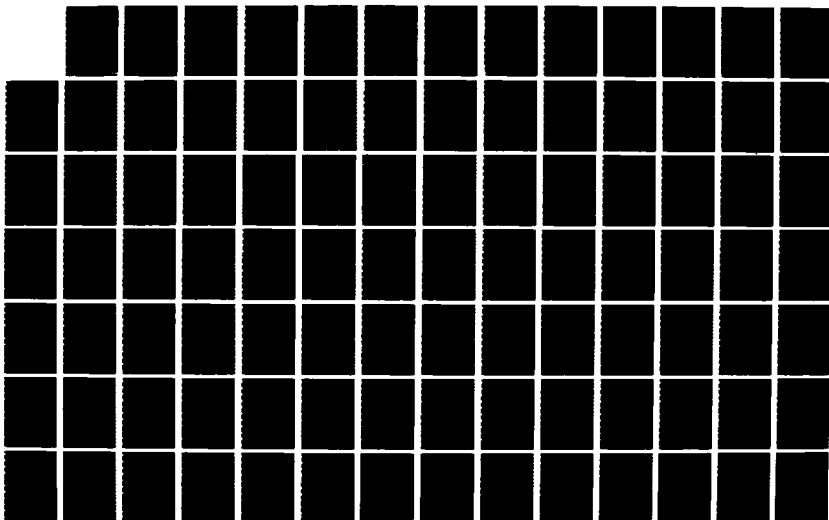
SOUTH ATLANTIC OMEGA VALIDATION VOLUME 2 APPENDICES F-L
(U) SYSTEMS CONTROL TECHNOLOGY INC PALO ALTO CA
T M WATT ET AL JAN 83 DTICG23-81-C-48823

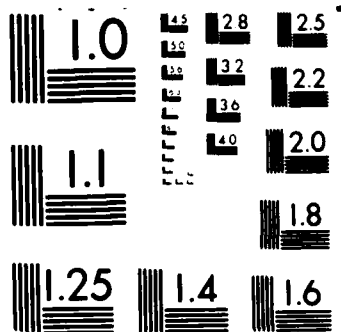
3/4

UNCLASSIFIED

F/G 17/7

NL

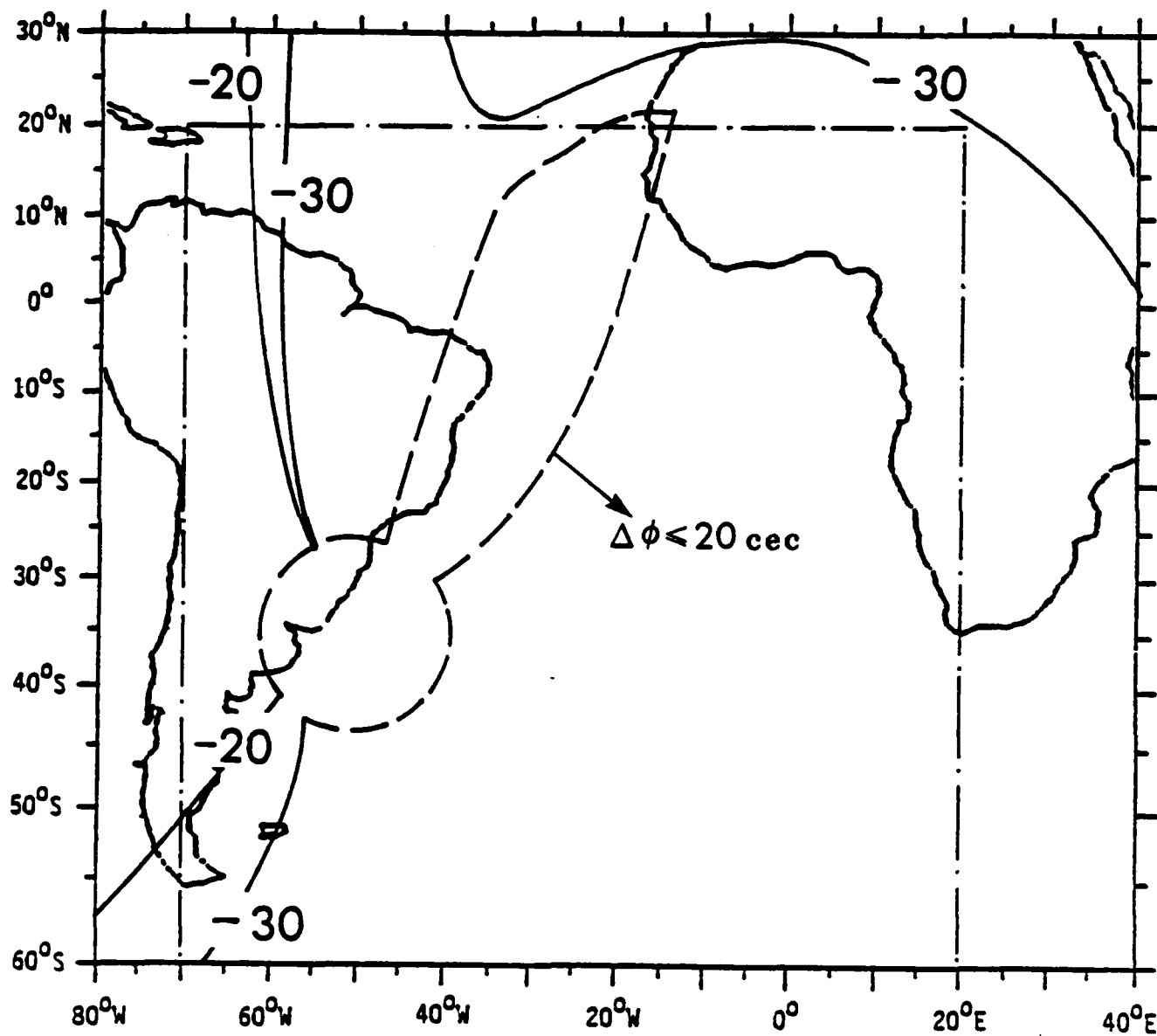




JAPAN (H)

FEBRUARY

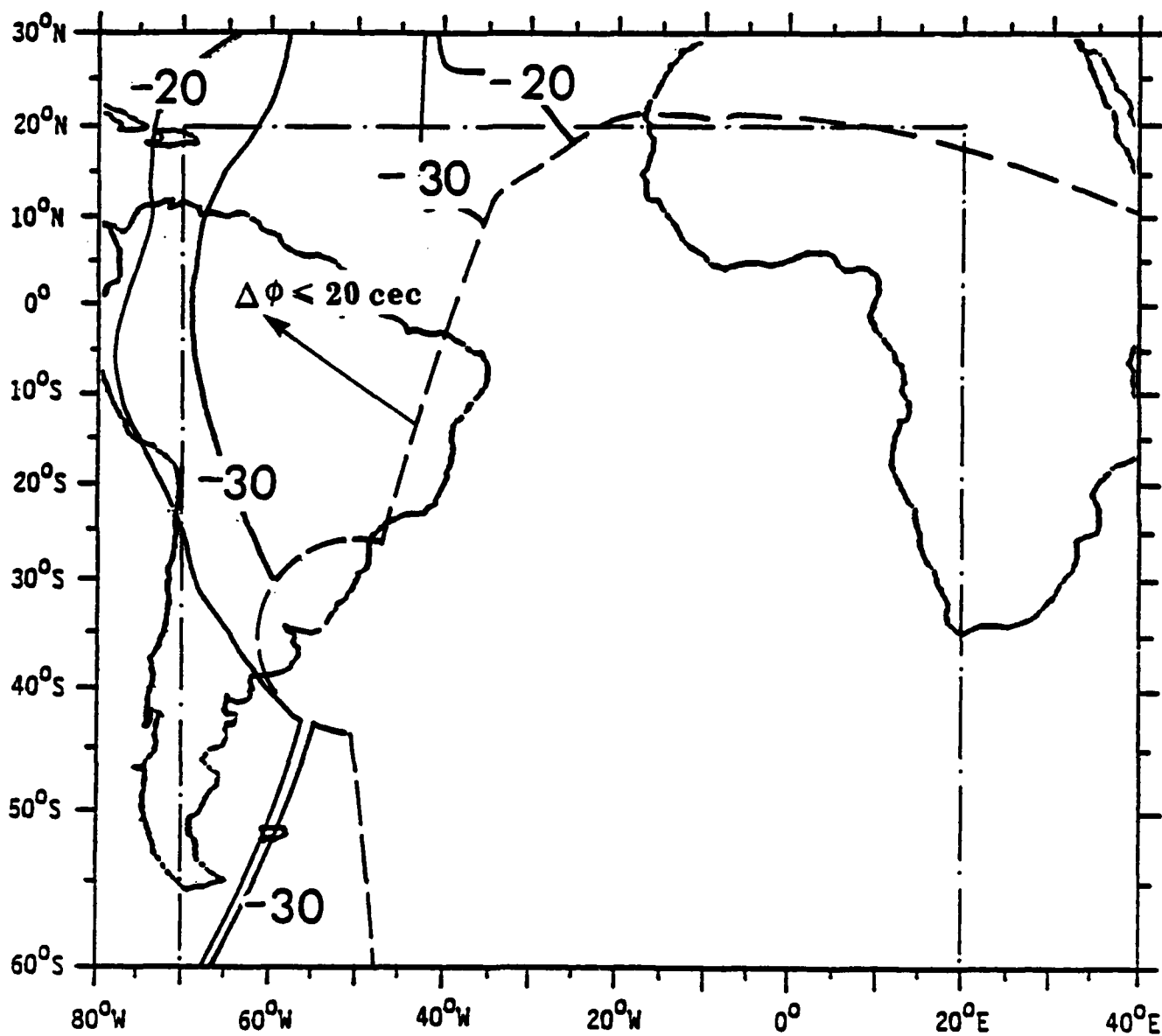
0600 GMT



JAPAN (H)

FEBRUARY

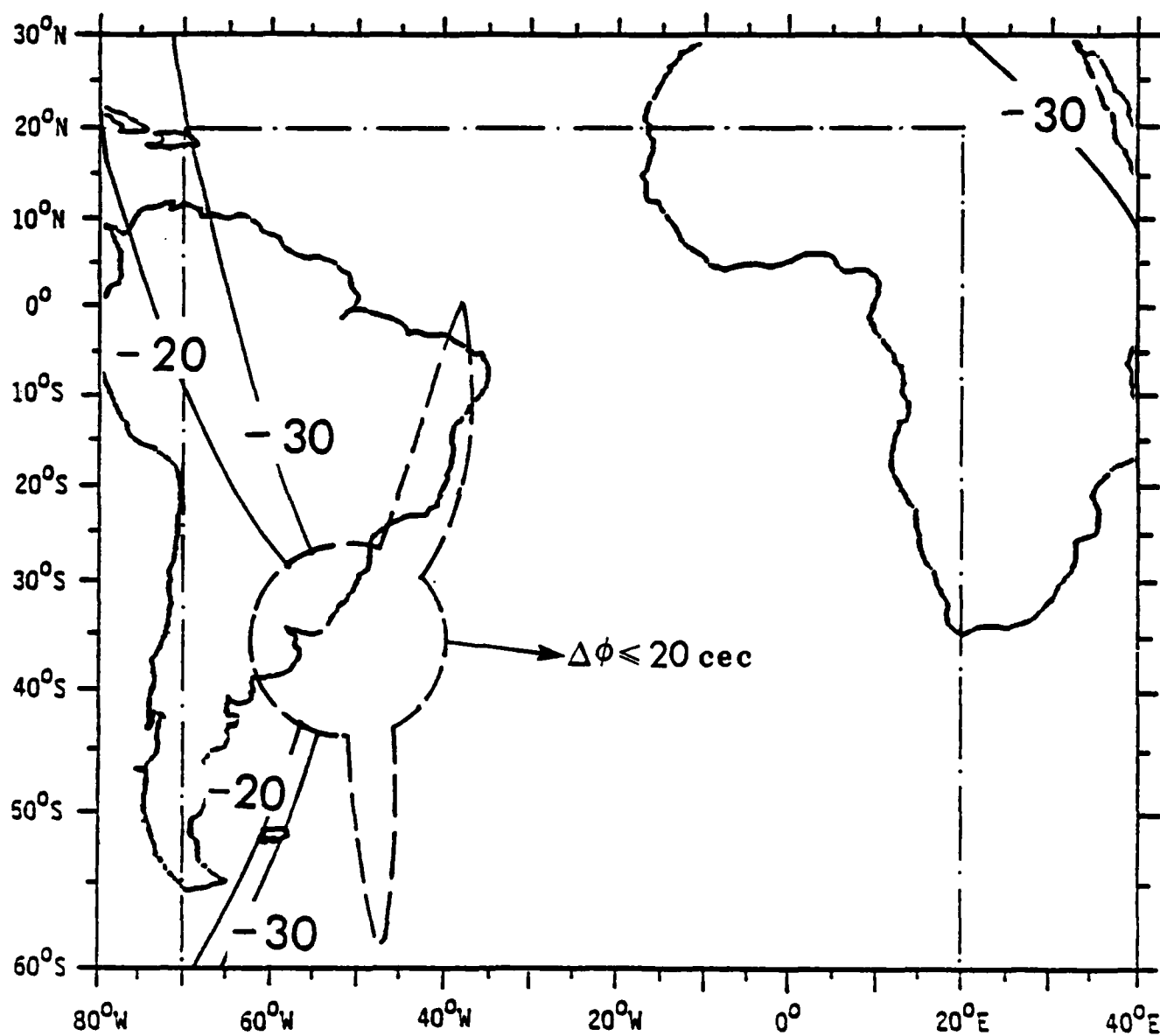
1800 GMT



JAPAN (H)

MAY

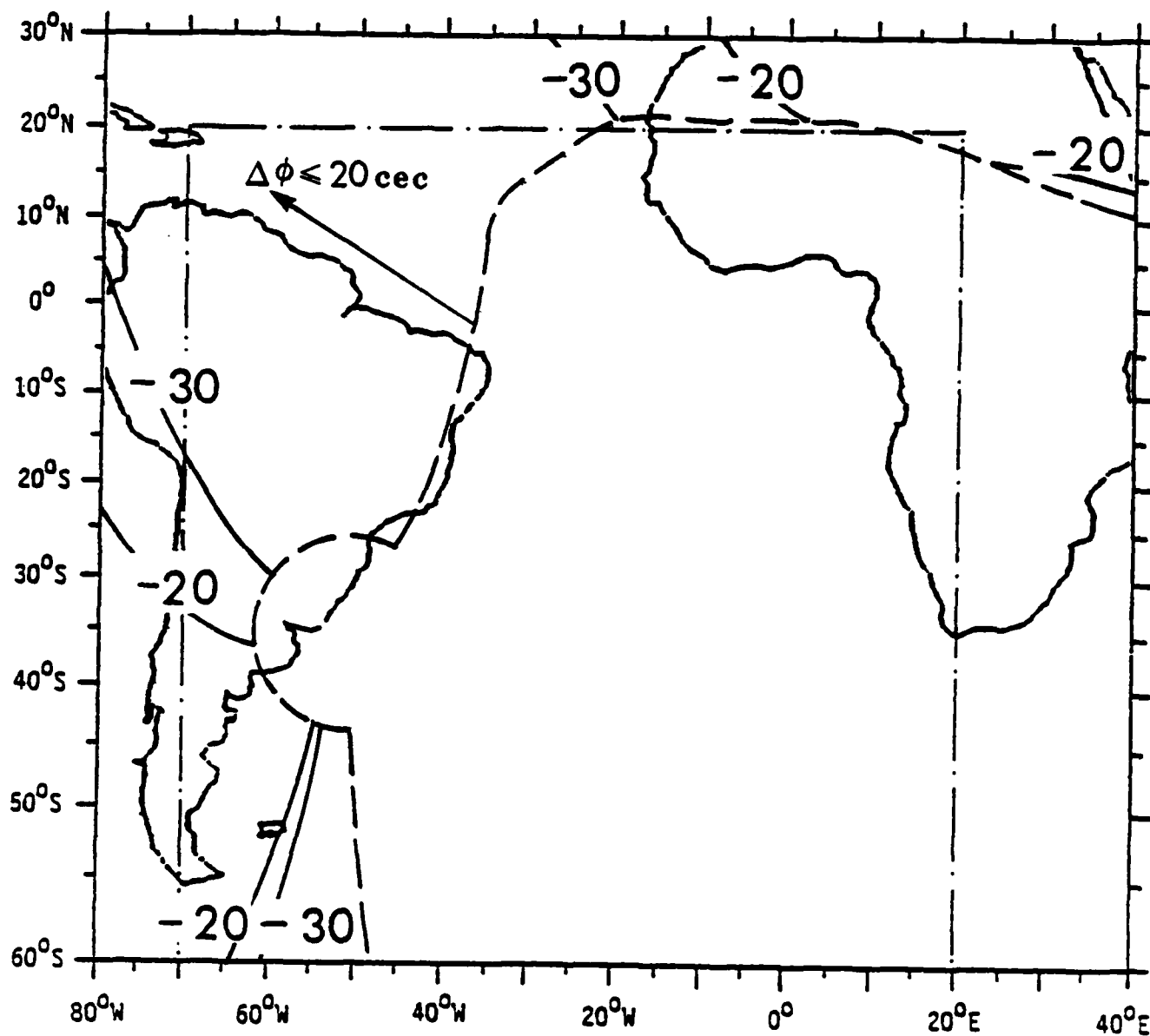
0600 GMT



JAPAN (H)

MAY

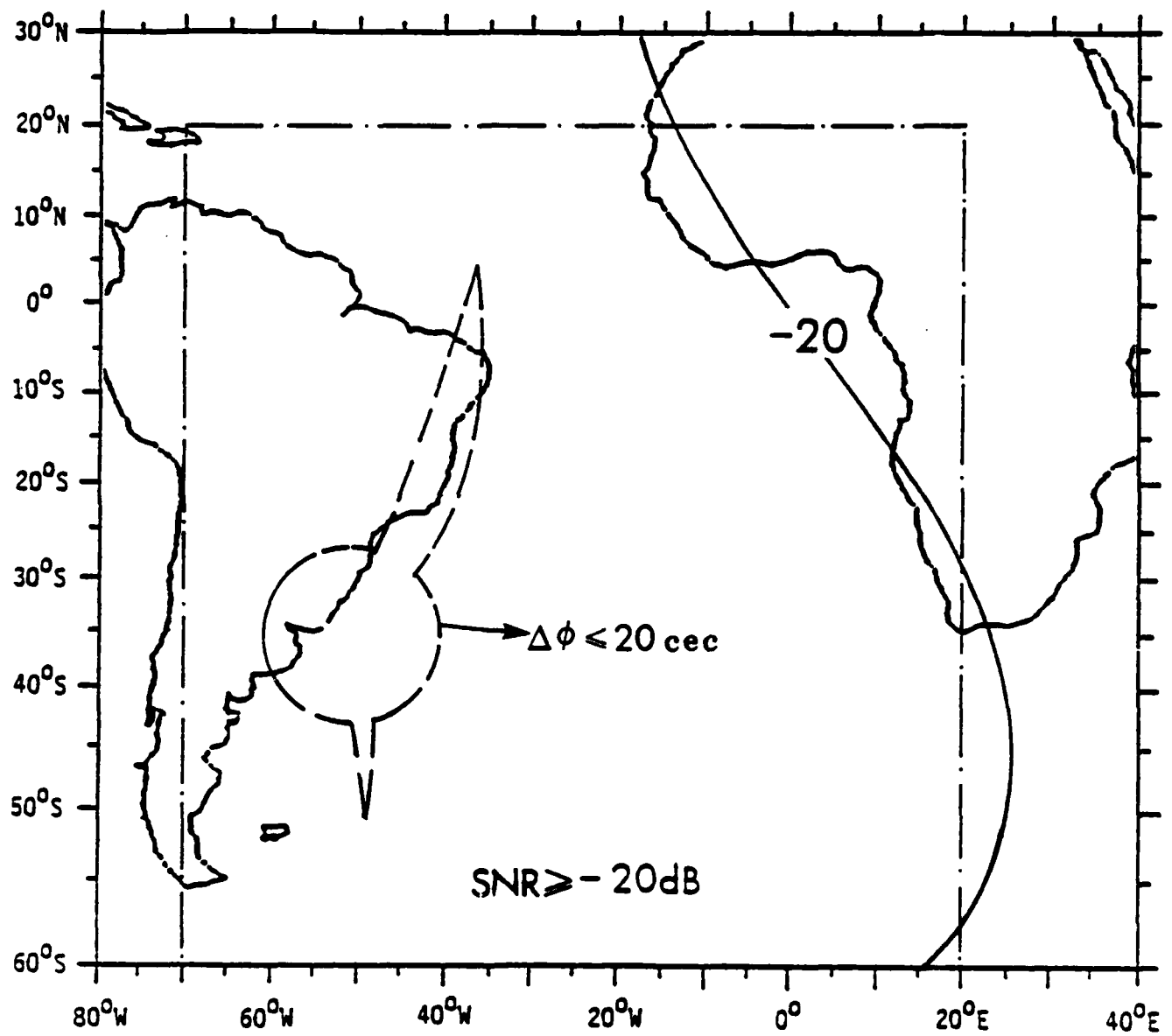
1800 GMT



JAPAN (H)

AUGUST

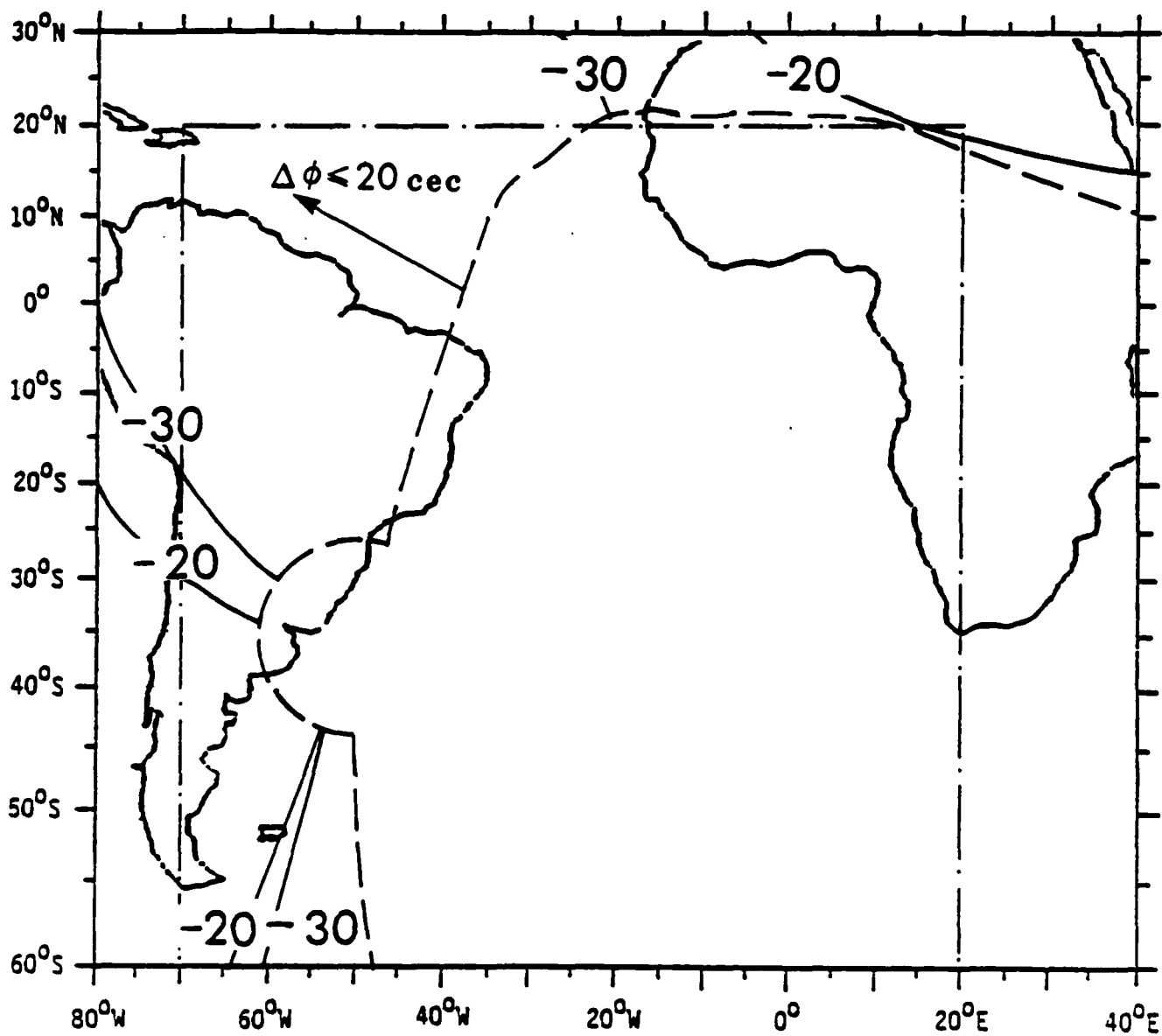
0600 GMT



JAPAN (II)

AUGUST

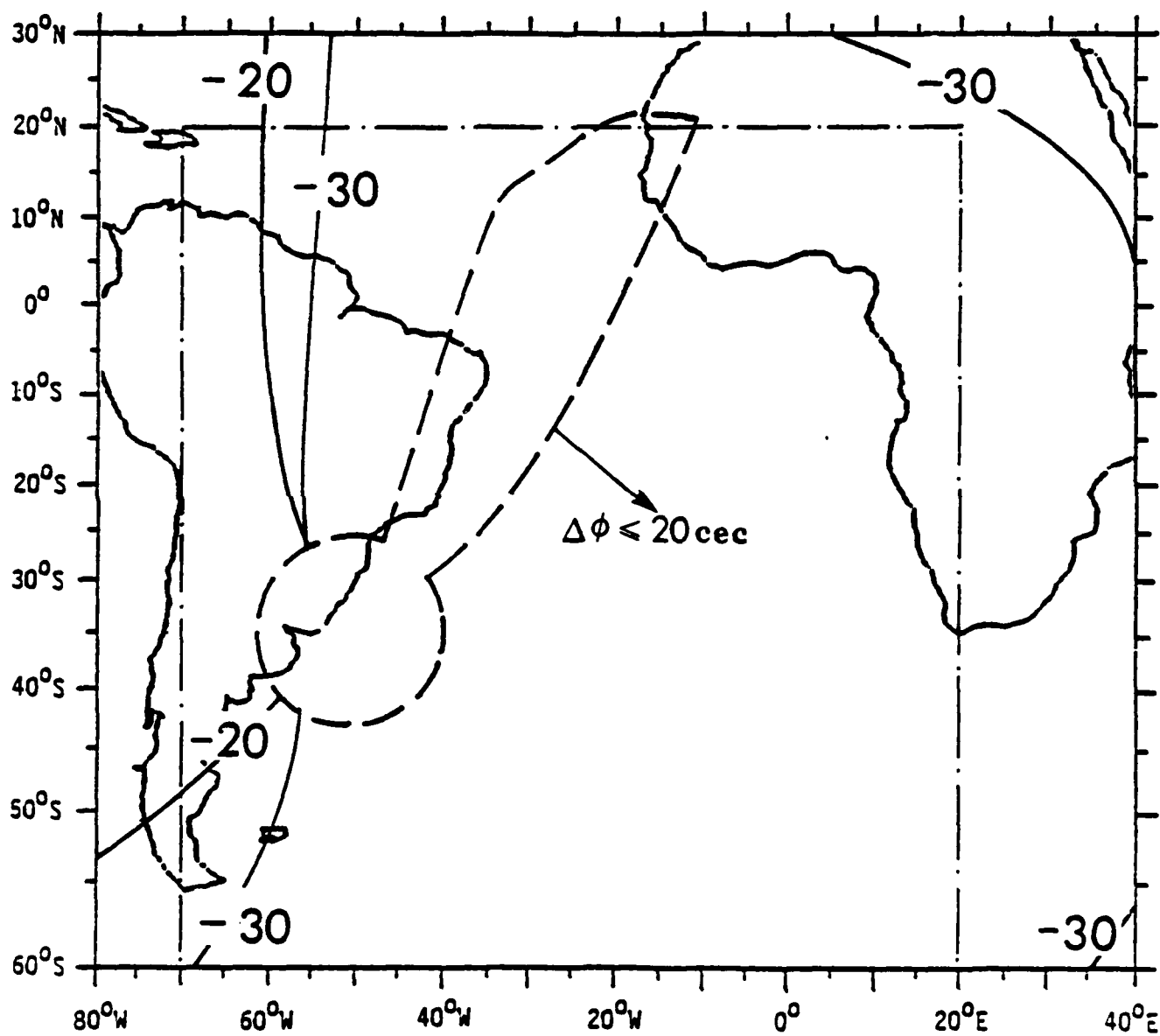
1800 GMT



JAPAN (H)

NOVEMBER

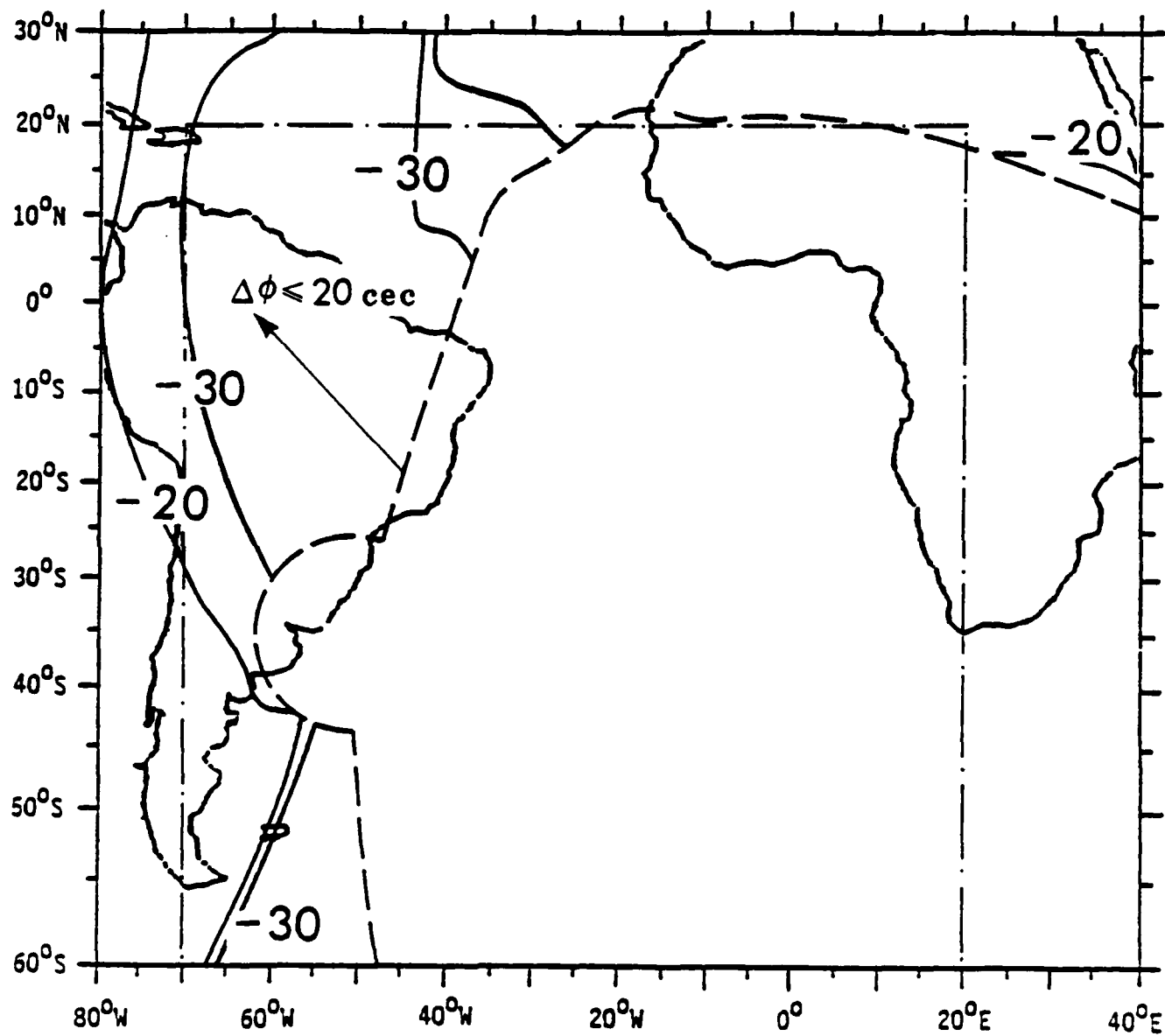
0600 GMT



JAPAN (H)

NOVEMBER

1800 GMT



APPENDIX I

DIURNAL VARIATIONS IN LOP ERROR AT 10.2 KHZ IN SOUTH ATLANTIC REGION

APPENDIX I

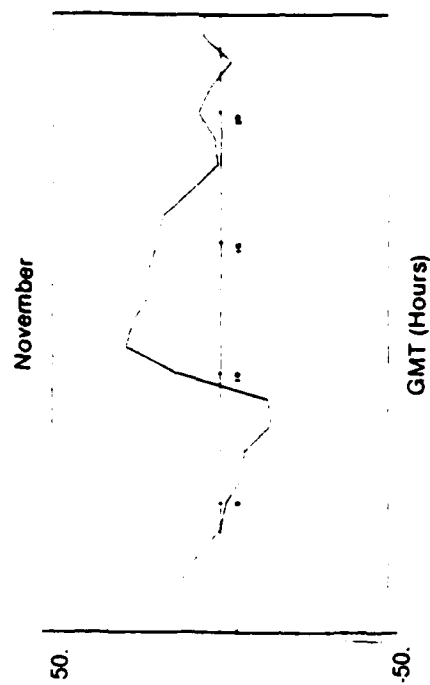
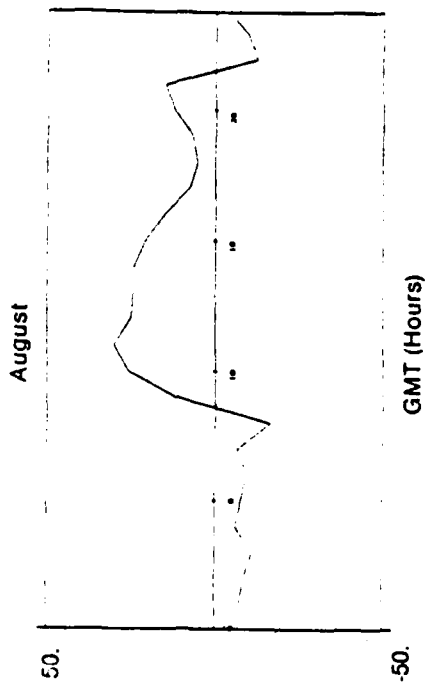
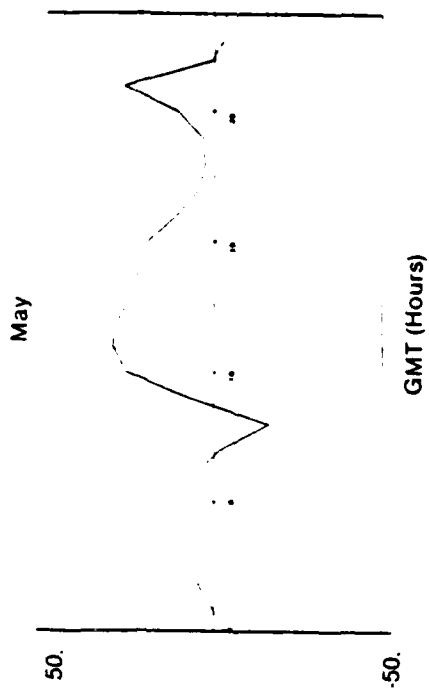
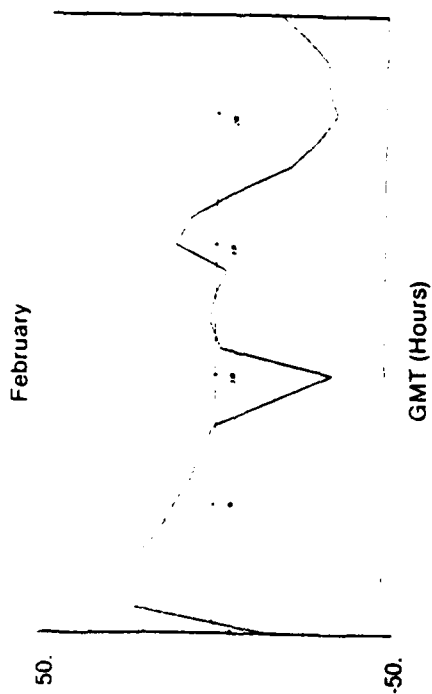
DIURNAL VARIATIONS IN LOP ERROR AT 10.2 KHz IN SOUTH ATLANTIC REGION

Contained herein are plots of diurnal variations in monthly averages of LOP errors observed at certain ONSOD monitor sites and recorded on MASTERFILE. Each plotted point represents a monthly average of unflagged hourly values of phase difference error, or LOP error; the plots connect hourly points with straight lines.

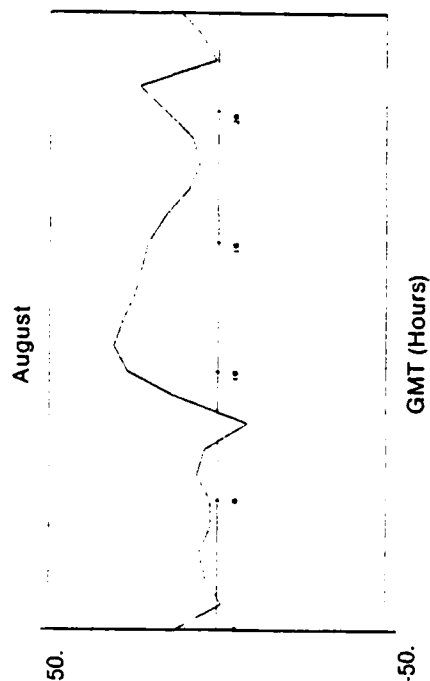
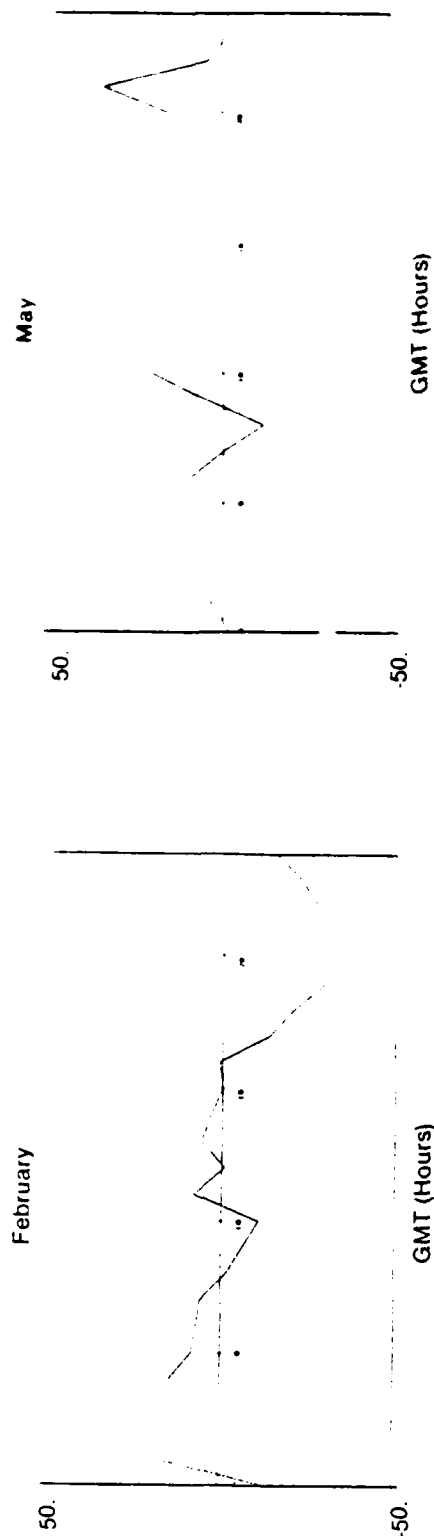
The plots are arranged in the following order:

- o All plots are arranged in groups associated with one monitor site. The monitor-site groups are arranged alphabetically.
- o Within each group, all plots are arranged in subgroups according to LOPs. LOP subgroups are arranged alphabetically as AB, AC, BC, BD,, etc.
- o Within each subgroup, plots are arranged chronologically. Each page contains from one to four plots representing the possible months of February, May, August and November, thus each page presents all available plots for any one calendar year.

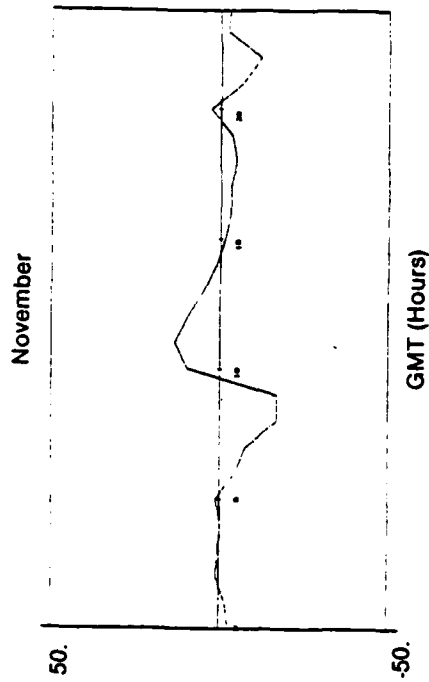
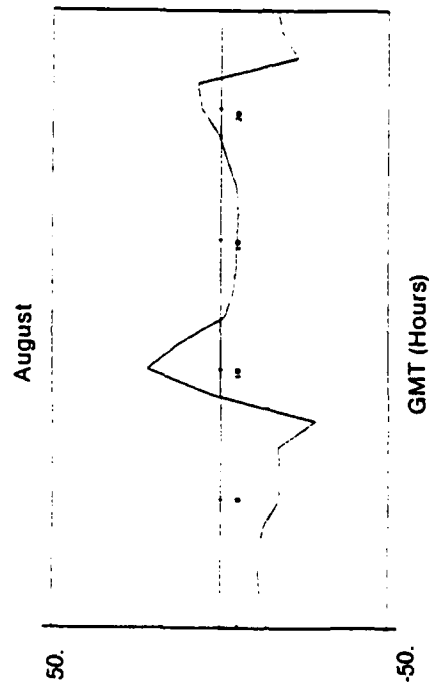
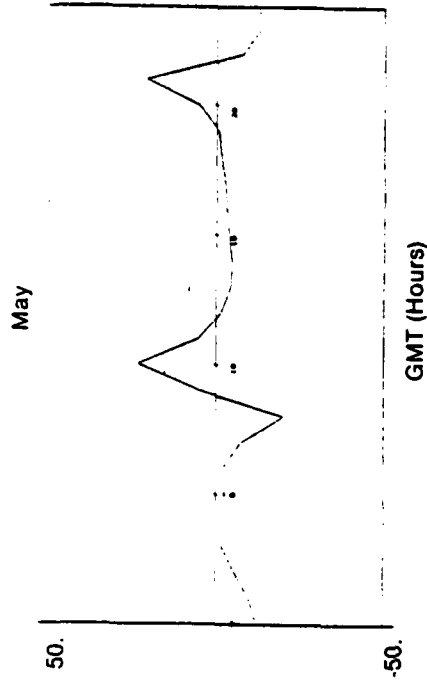
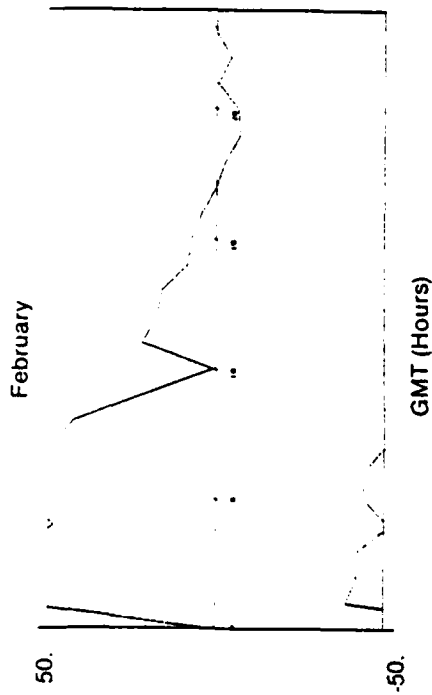
Diurnal Variation of LOP Error in Centi-Cycles
for LOP A C at 10.2 kHz
Monitor Site: Belem, Brazil 1975



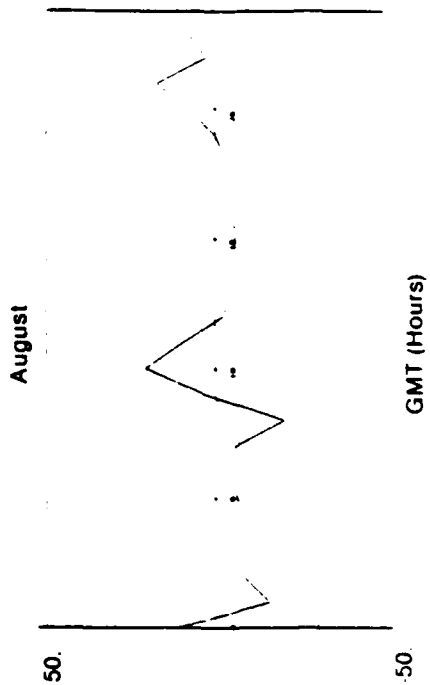
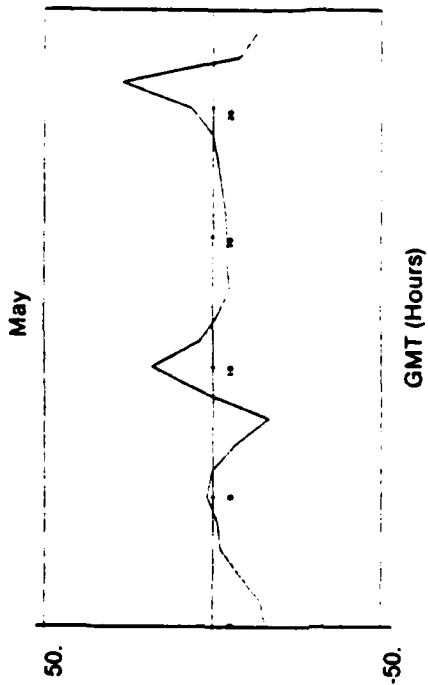
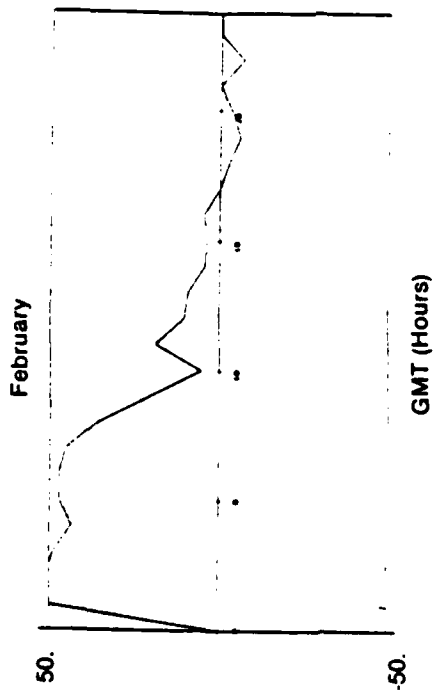
Diurnal Variation of LOP Error in Centi-Cycles
for LOP A C at 10.2 kHz
Monitor Site: Belem, Brazil 1976



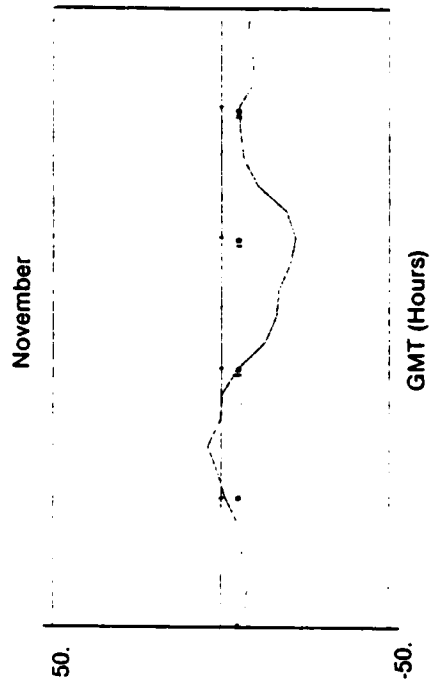
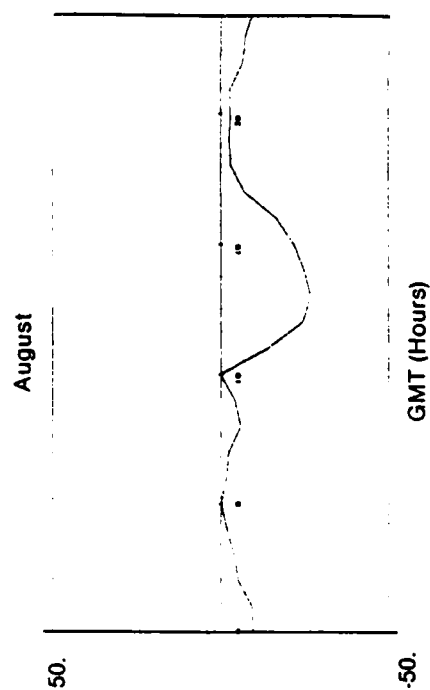
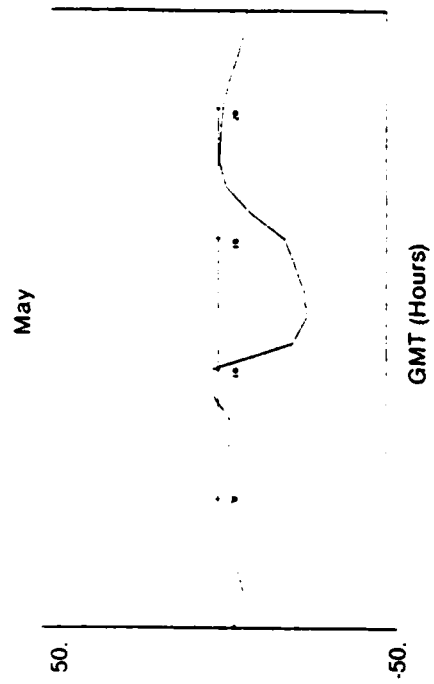
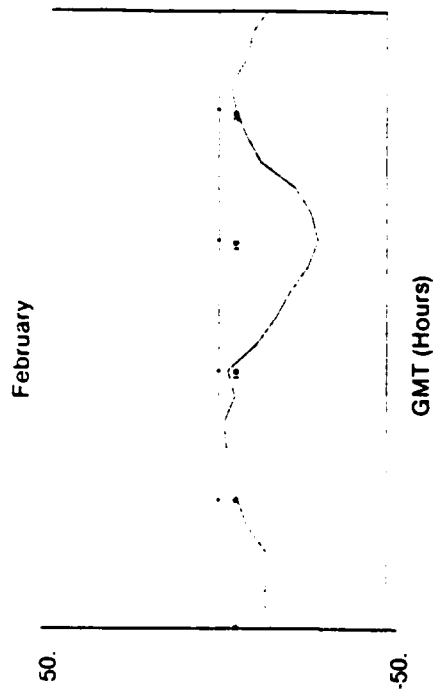
Diurnal Variation of LOP Error in Centi-Cycles
for LOP A D at 10.2 kHz
Monitor Site: Belem, Brazil 1975



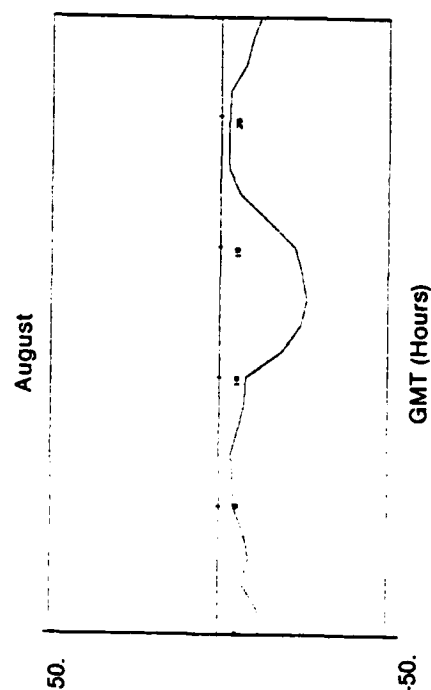
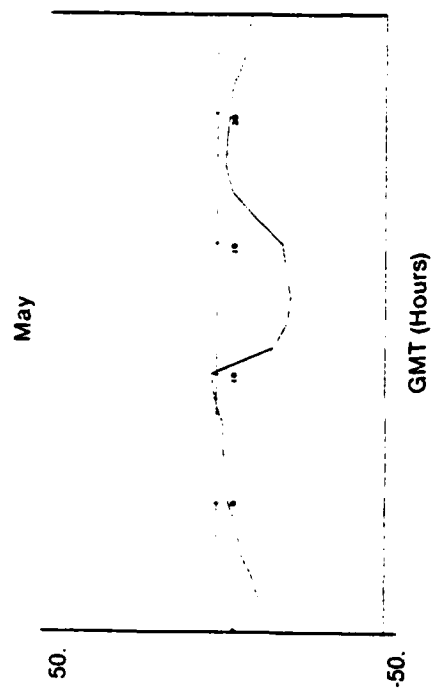
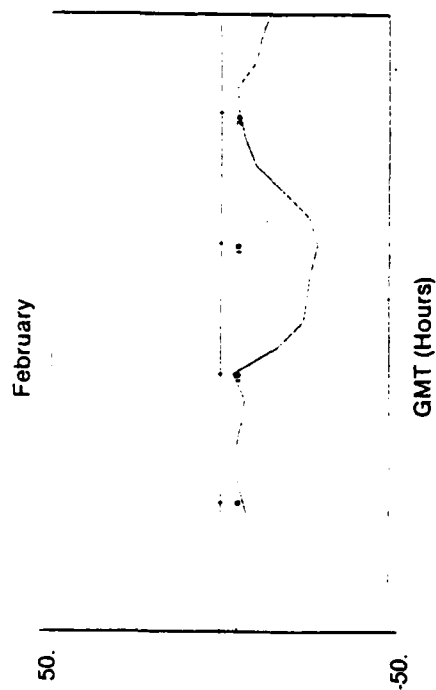
Diurnal Variation of LOP Error in Centi-Cycles
for LOP A D at 10.2 kHz
Monitor Site: Belem, Brazil 1976



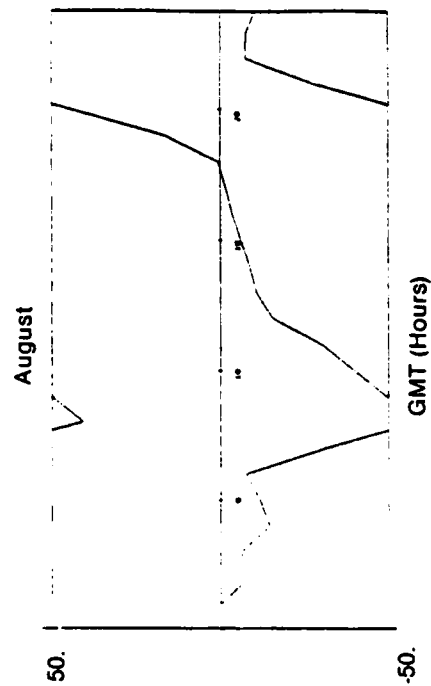
Diurnal Variation of LOP Error in Centi-Cycles
for LOP C D at 10.2 kHz
Monitor Site: Belem, Brazil 1975



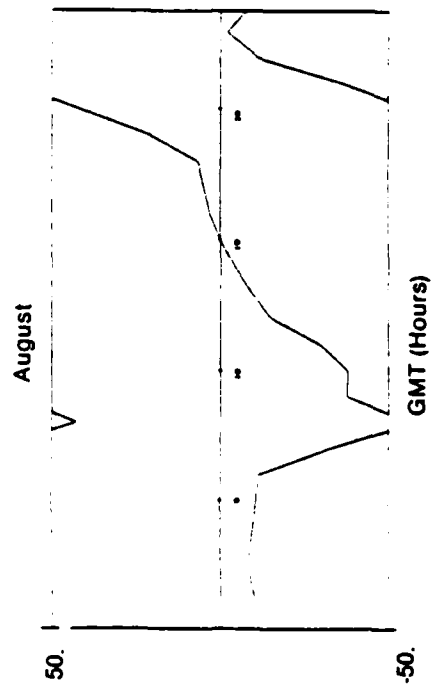
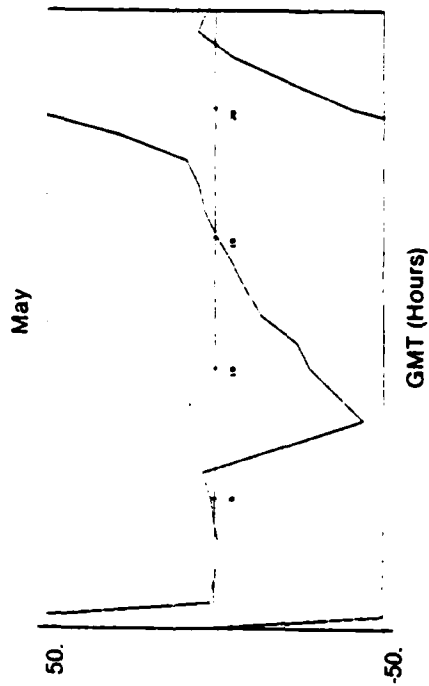
Diurnal Variation of LOP Error in Centi-Cycles
for LOP C D at 10.2 kHz
Monitor Site: Belem, Brazil 1976



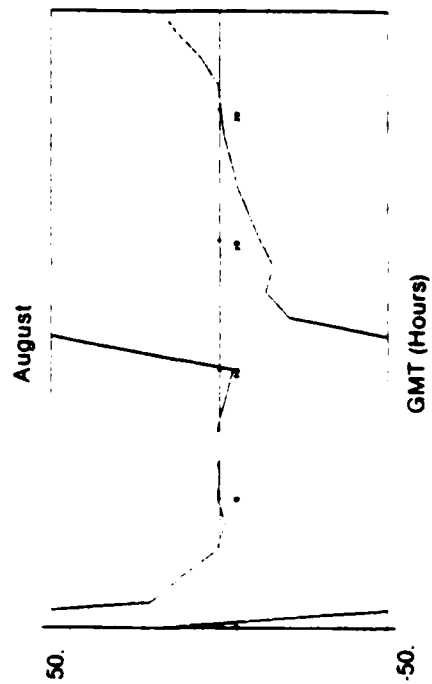
Diurnal Variation of LOP Error in Centi-Cycles
for LOP B F at 10.2 kHz
Monitor Site: Golfo Nuevo 1977



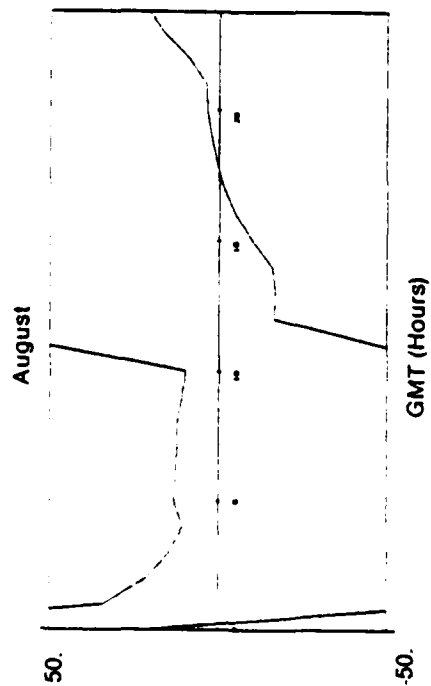
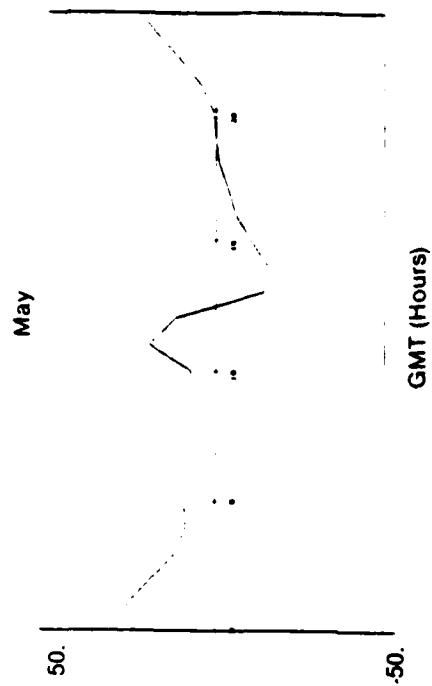
Diurnal Variation of LOP Error in Centi-Cycles
for LOP B F at 10.2 kHz
Monitor Site: Golfo Nuevo 1979



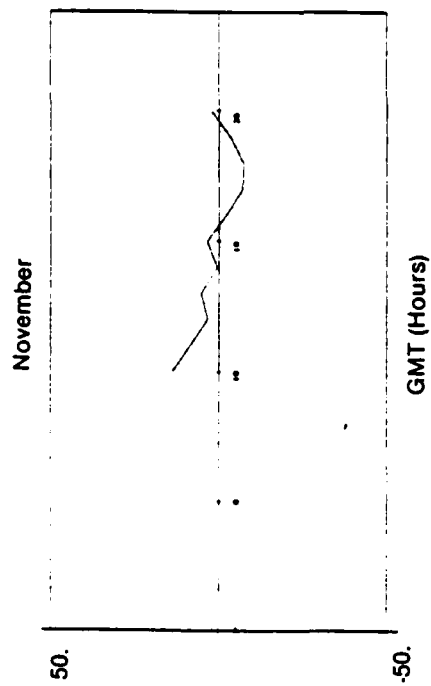
Diurnal Variation of LOP Error in Centi-Cycles
for LOP D F at 10.2 kHz
Monitor Site: Golfo Nuevo 1977



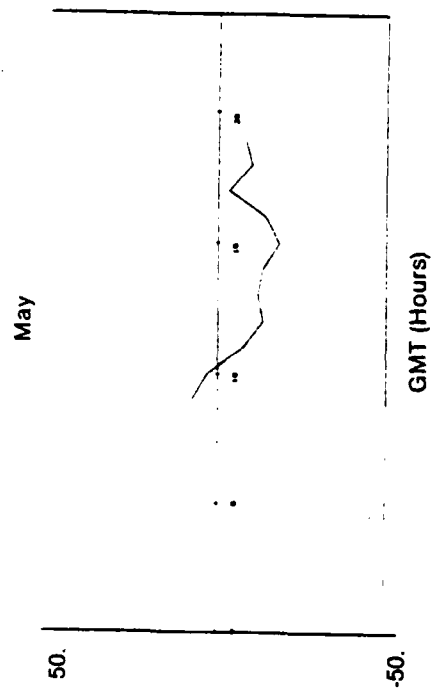
Diurnal Variation of LOP Error in Centi-Cycles
for LOP D F at 10.2 kHz
Monitor Site: Golfo Nuevo 1979



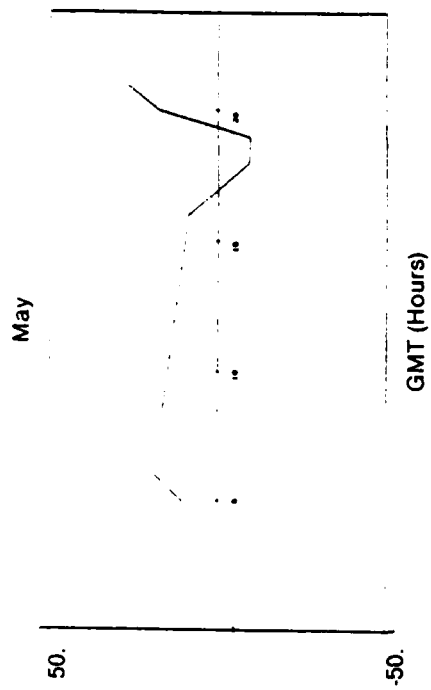
Diurnal Variation of LOP Error in Centi-Cycles
for LOP A D at 10.2 kHz
Monitor Site: Natal 1978



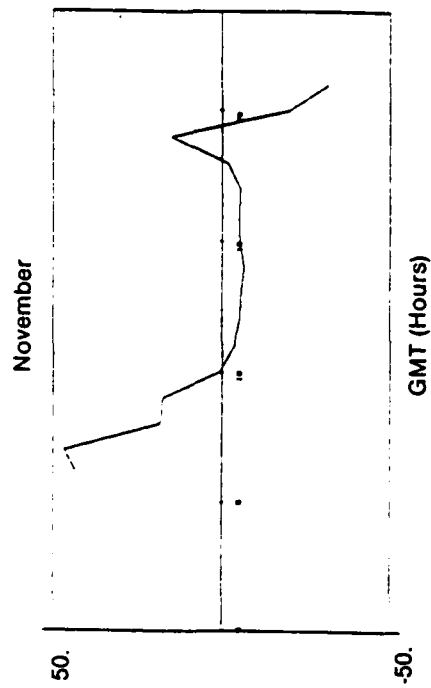
Diurnal Variation of LOP Error in Centi-Cycles
for LOP A D at 10.2 kHz
Monitor Site: Natal 1979



Diurnal Variation of LOP Error in Centi-Cycles
for LOP A E at 10.2 kHz
Monitor Site: Natal 1979



Diurnal Variation of LOP Error in Centi-Cycles
for LOP B F at 10.2 kHz
Monitor Site: Natal 1978



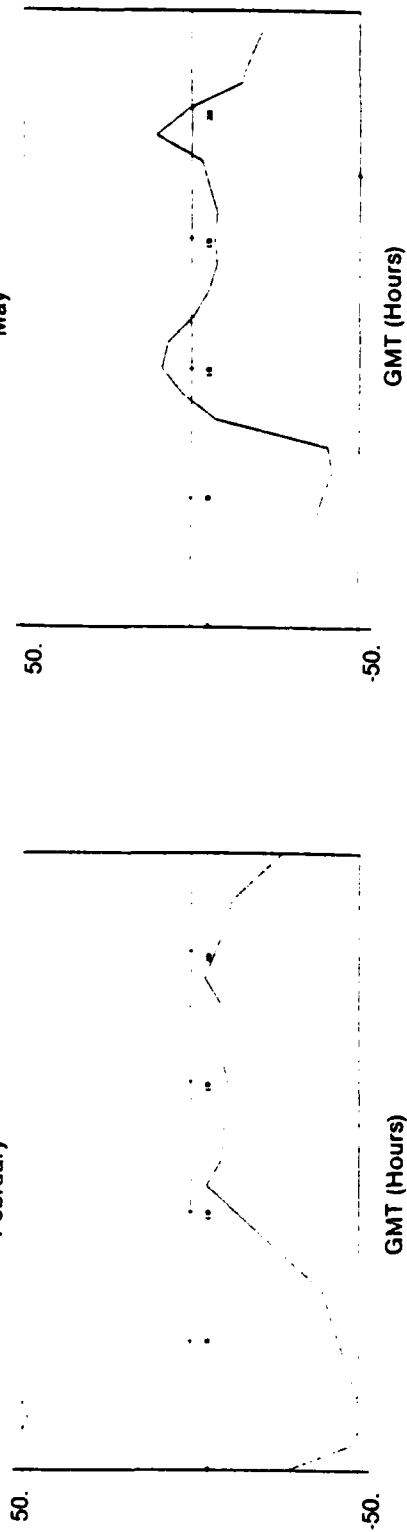
Diurnal Variation of LOP Error in Centi-Cycles
for LOP B F at 10.2 kHz

Monitor Site: Natal 1979

February

50.

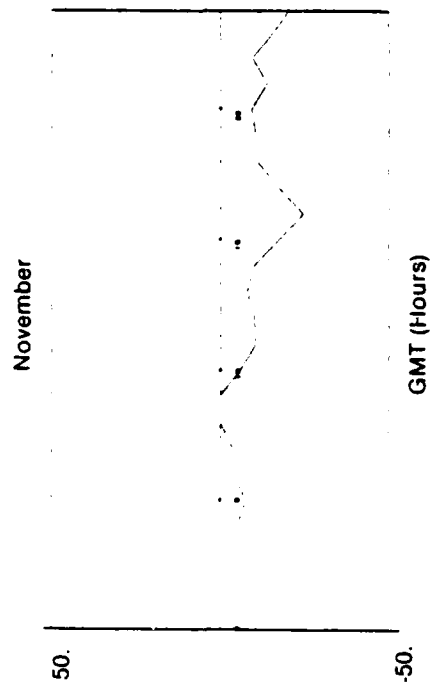
50.



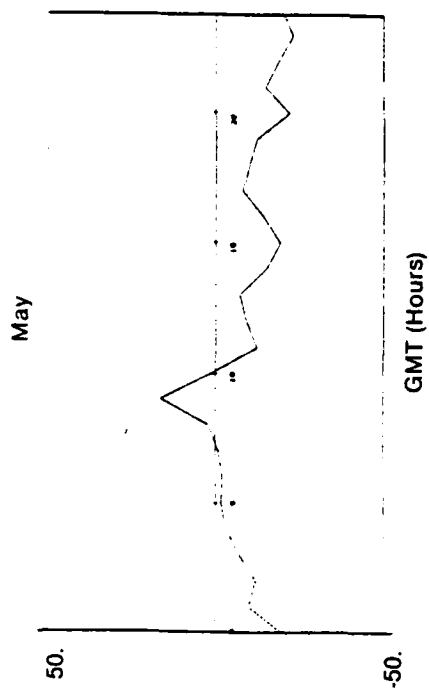
GMT (Hours)

GMT (Hours)

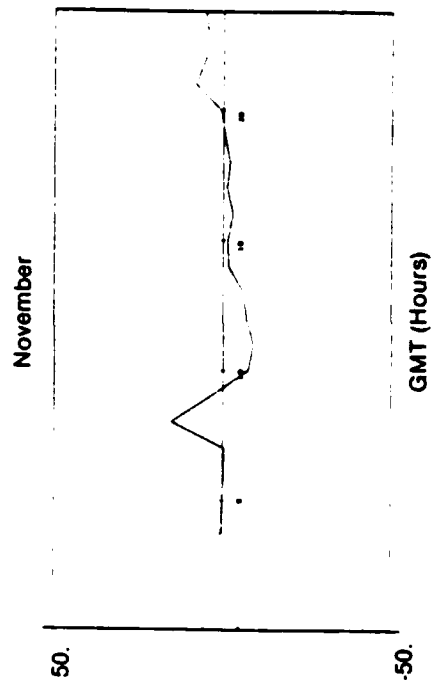
Diurnal Variation of LOP Error in Centi-Cycles
for LOP C D at 10.2 kHz
Monitor Site: Natal 1978



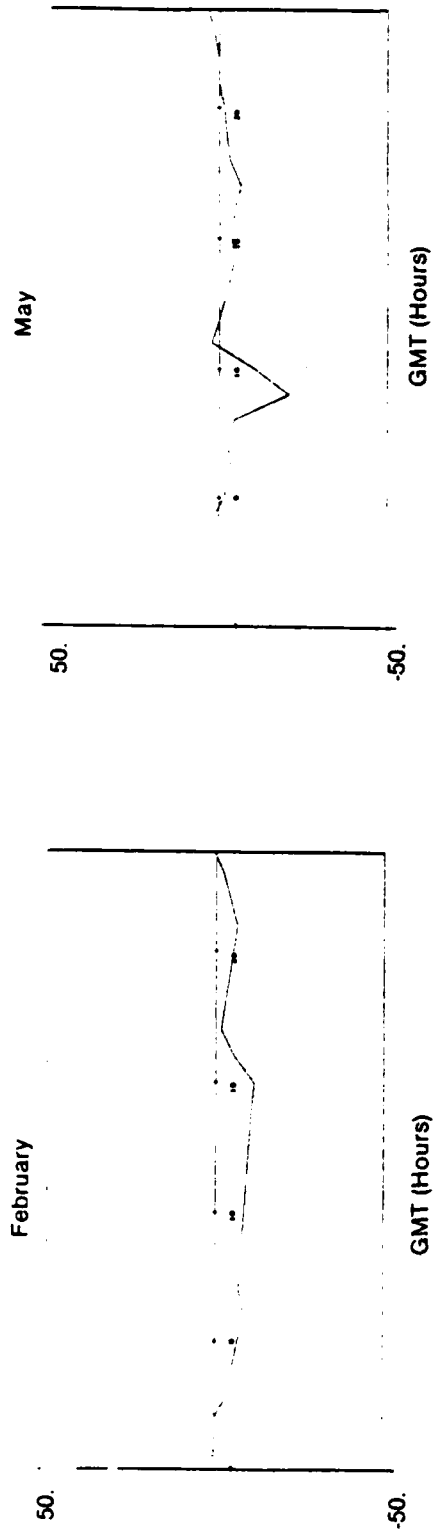
Diurnal Variation of LOP Error in Centi-Cycles
for LOP C D at 10.2 kHz
Monitor Site: Natal 1979



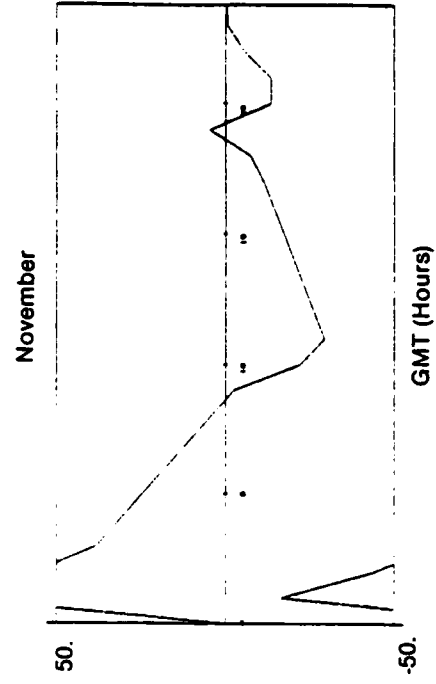
Diurnal Variation of LOP Error in Centi-Cycles
for LOP D F at 10.2 kHz
Monitor Site: Natal 1978



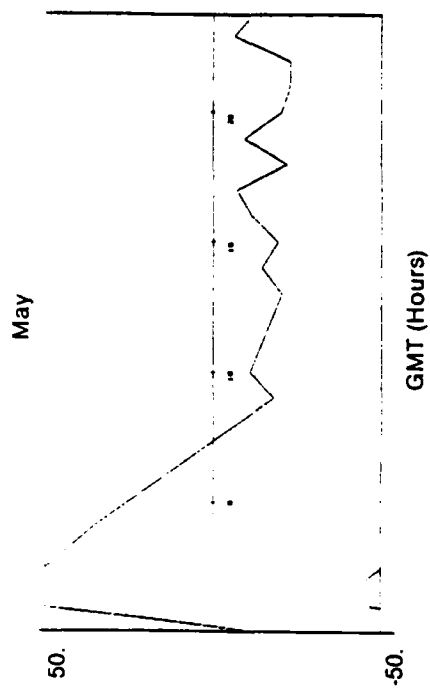
Diurnal Variation of LOP Error in Centi-Cycles
for LOP D F at 10.2 kHz
Monitor Site: Natal 1979



Diurnal Variation of LOP Error in Centi-Cycles
for LOP E F at 10.2 kHz
Monitor Site: Natal 1978



Diurnal Variation of LOP Error in Centi-Cycles
for LOP E F at 10.2 kHz
Monitor Site: Natal 1979



APPENDIX J

LOP ERROR STATISTICS AT 10.2 KHz
IN SOUTH ATLANTIC REGION

LOP ERRORS IN CENTI-CYCLES AT 10.2 KHz

FEBRUARY

LOP: AB

[illegible]

LOP: AC

[illegible]

LOP: AD

[illegible]

LOP: AE

[illegible]

LOP: AF

[illegible]

LOP ERRORS IN CENTI-CYCLES AT 10.2 KHz

FEBRUARY

LOP: BC

[illegible]

LOP: BD

[illegible]

LOP: BE

[illegible]

LOP: BF

[illegible]

LOP ERRORS IN CENTI-CYCLES AT 10.2 KHz

FEBRUARY

LOP: CD

[illegible]

LOP: CE

[illegible]

LOP: CF

[illegible]

LOP: DE

[illegible]

LOP: DF

[illegible]

LOP: EF

[illegible]

LOP ERRORS IN CENTI-CYCLES AT 10.2 KHz

MAY

LOP: AB

MAP GRID	0600 GMT			1800 GMT		
	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION
11	6	-4	20	4	-3	2
12	3	-19	0	4	3	3
22	3	20	0	2	5	0
23	10	4	21	6	7	2
34	1	-82	0	10	0	3
38	5	14	9	2	-10	0
39	2	0	0	3	0	4
44				4	16	17
45	3	-5	6	12	0	3
46	5	-9	25	6	8	4
47	2	-13	10	3	-4	0
54	2	34	0	1	-1	0
56	1	9	0	3	12	7
57	2	4	0	2	2	0
58				3	-5	0

LOP ERRORS IN CENTI-CYCLES AT 10.2 KHz

MAY

LOP: AC

MAP GRID	0600 GMT			1800 GMT		
	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION
11	8	-5	5	4	0	2
12	2	-3	0	4	6	3
22	3	4	0	2	6	0
23	8	11	5	5	5	3
34				10	4	5
35				1	5	0
38	6	14	9			
39	2	-5	0			
45	2	6	6	14	7	5
46	5	-1	26	6	14	3
47	2	-26	2	3	16	0
54	2	73	0	1	7	0
56				3	11	11
57	1	28	0			
58				3	13	0

LOP ERRORS IN CENTI-CYCLES AT 10.2 KHz

MAY

LOP: AD

MAP GRID	0600 GMT			1800 GMT		
	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION
11	8	5	5	5	6	3
12	3	7	0	4	7	3
22	3	11	0	1	4	0
23	10	19	1	5	8	2
34	1	-29	0	11	7	5
38	6	12	9	3	20	25
39	3	4	0	2	22	3
45	3	26	6	14	11	5
46	4	3	27	6	18	3
47	2	-15	10	3	9	0
54	3	31	0	1	12	0
56	1	31	0	2	21	12
57	2	14	0	2	8	0
58				2	13	0

LOP ERRORS IN CENTI-CYCLES AT 10.2 KHz

MAY

LOP: AE

MAP GRID	0600 GMT			1800 GMT		
	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION
23				1	-19	0
34	1	-70	0	6	-12	4
35				1	-10	0
38	6	26	9	3	4	5
39	3	24	0	3	6	8
45	3	37	31	12	-8	9
46	5	-7	23	5	4	9
47	2	-9	24	3	-5	0
54	2	*		1	-9	0
56	1	20	0	3	5	6
57	2	18	0	2	0	0
58				3	-10	0

* Error > 100

LOP ERRORS IN CENTI-CYCLES AT 10.2 KHz

MAY

LOP: AF

MAP GRID	0600 GMT			1800 GMT		
	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION
11	8	24	2	5	4	3
12	3	-8	0	4	6	3
22	3	25	0	2	4	0
23	10	26	2	6	7	3
34				11	4	5
35				1	2	0
38	6	18	4	3	16	18
39	3	9	0	3	17	3
45	3	16	1	12	5	5
46	5	-3	28	7	11	4
47	2	-22	12	3	9	0
54	3	20	0	1	4	0
56	1	31	0	3	10	12
57	1	13	0	2	2	0
58				3	0	0

LOP ERRORS IN CENTI-CYCLES AT 10.2 KHz

MAY

LOP: AH

[illegible]

LOP ERRORS IN CENTI-CYCLES AT 10.2 KHz

MAY

LOP: BC

MAP GRID	0600 GMT			1800 GMT		
	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION
11	6	-14	36	4	4	2
12	3	16	0	4	3	0
22	3	-16	0	2	1	0
23	11	12	24	5	-2	5
34	6	-13	35	10	3	7
35	4	12	16	1	6	0
38	7	2	11	1	38	0
39	2	-5	0			
44	1	55	0			
45	6	24	13	13	6	5
46	10	9	6	7	9	2
47	3	-11	4	3	20	0
53		*				
54	2	39	0	1	8	0
56	1	19	0	3	-1	4
57	4	19	0			
58				4	14	0

* Error > 100

LOP ERRORS IN CENTI-CYCLES AT 10.2 KHz

MAY

LOP: BD

MAP GRID	0600 GMT			1800 GMT		
	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION
11	6	9	25	4	10	4
12	3	25	0	4	4	0
22	3	-9	0	2	0	0
23	10	14	21	6	0	4
34	6	12	35	11	7	7
35	4	25	27	1	10	0
38	6	1	8	4	21	6
39	3	-1	0	1	30	0
44	1	34	0			
45	7	27	4	13	10	2
46	10	16	9	7	11	2
47	3	-1	15	3	13	0
53	1	*				
54	3	26	0	1	13	0
56	1	22	0	4	8	3
57	4	11	0	1	7	0
58				4	20	0

* Error > 100

LOP ERRORS IN CENTI-CYCLES AT 10.2 KHz

MAY

LOP: BE

MAP GRID	0600 GMT			1800 GMT		
	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION
23				1	-19	0
34	4	15	17	5	-14	5
35	4	-4	24	1	-8	0
38	5	15	10	4	5	6
39	2	15	0	3	5	4
45	6	17	37	41	-9	4
46	10	-1	6	6	-3	5
47	3	-2	7	3	-1	0
53	2	*				
54	2	68	0	1	-8	0
56	1	11	0	3	-3	5
57	4	5	0	2	-2	0
58				4	-4	0

* Error > 100

LOP ERRORS IN CENTI-CYCLES AT 10.2 KHz

MAY

LOP: BF

MAP GRID	0600 GMT			1800 GMT		
	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION
11	7	23	29	4	8	1
12	3	11	0	5	4	1
22	3	5	0	2	-2	0
23	10	29	21	6	-1	4
34	7	13	36	10	3	6
35	4	18	17	1	4	0
38	7	7	6	4	18	3
39	3	4	0	3	12	2
44	1	28	0			
45	7	17	6	14	4	2
46	10	7	1	8	4	1
47	2	-1	0	3	13	0
53	2	*				
54	3	15	0	1	4	0
56	1	22	0	4	-2	4
57	3	9	0	2	1	0
58				2	3	0

* Error > 100

LOP ERRORS IN CENTI-CYCLES AT 10.2 KHz

MAY

LOP: CD

MAP GRID	0600 GMT			1800 GMT		
	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION
11	7	9	1	5	6	1
12	3	10	0	4	1	0
22	3	7	0	2	-1	0
23	11	5	3	6	3	3
34	6	9	3	9	2	3
35	4	13	11	1	4	0
38	7	0	5	1	-23	0
39	2	-3	0			
44	1	-21	0			
45	7	8	11	14	4	3
46	9	7	12	6	4	3
47	2	16	8	2	-2	0
53	2	-25	0			
54	2	-19	0	1	5	0
56	1	3	0	4	8	1
57	4	-8	0			
58				4	5	0

LOP ERRORS IN CENTI-CYCLES AT 10.2 KHz

MAY

LOP: CE

MAP GRID	0600 GMT			1800 GMT		
	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION
23				1	-26	0
34	2	-19	9	4	-16	6
35	4	-16	8	1	-15	0
38	6	8	11	1	-38	0
39	2	18	0			
44	1	-34	0			
45	7	-3	11	13	-16	6
46	10	-10	3	7	-11	6
47	3	9	11	3	-20	0
53	2	-34	0			
54	2	29	0	1	-16	0
56	1	-8	0	4	-4	2
57	4	-14	0			
58				4	-18	0

LOP ERRORS IN CENTI-CYCLES AT 10.2 KHz

MAY

LOP: CF

MAP GRID	0600 GMT			1800 GMT		
	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION
11	7	29	4	5	4	1
12	3	-5	0	4	0	0
22	3	21	0	2	-2	0
23	11	13	1	6	2	6
34	6	18	7	9	1	4
35	3	6	1	1	-2	0
38	7	4	6	1	-23	0
39	2	6	0			
44	1	-27	0			
45	7	-2	9	14	-2	3
46	10	-2	5	8	-4	3
47	3	6	10	3	-7	0
53	2	-33	0			
54	3	-30	0	1	-3	0
56	1	3	0	4	-2	0
57	3	-9	0			
58				4	-10	0

LOP ERRORS IN CENTI-CYCLES AT 10.2 KHz

MAY

LOP: CH

[illegible]

LOP ERRORS IN CENTI-CYCLES AT 10.2 KHz

MAY

LOP: DE

MAP GRID	0600 GMT			1800 GMT		
	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION
23				1	-25	0
34	4	-21	10	5	-21	4
35	4	-30	3	1	-19	0
38	7	9	6	4	-16	12
39	3	19	0	2	-20	8
44	1	-14	0			
45	5	-24	5	12	-20	3
46	10	-17	11	7	-14	6
47	3	-1	22	3	-14	0
53	2	-10	0			
54	2	44	0	1	-21	0
56	1	-11	0	4	-13	1
57	3	-8	0	2	-9	0
58				4	-23	0

LOP ERRORS IN CENTI-CYCLES AT 10.2 KHz

MAY

LOP: DF

MAP GRID	0600 GMT			1800 GMT		
	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION
11	7	19	4	4	-2	3
12	2	18	0	5	-2	0
22	3	14	0	2	-1	0
23	9	8	2	6	-1	3
34	7	8	6	11	-3	4
35	3	-12	0	1	-6	0
38	7	5	2	4	-3	3
39	3	5	0	2	-4	0
44	1	-6	0			
45	7	-10	2	14	-6	0
46	11	-8	9	7	-6	4
47	3	-4	20	3	0	0
53	2	-9	0			
54	2	-10	0	1	-9	0
56	1	0	0	4	-10	1
57	3	-1	0	2	-6	0
58				4	-16	0

LOP ERRORS IN CENTI-CYCLES AT 10.2 KHz

MAY

LOP: DH

[illegible]

LOP ERRORS IN CENTI-CYCLES AT 10.2 KHz

MAY

LOP: EF

MAP GRID	0600 GMT			1800 GMT		
	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION
23				1	24	0
34	4	28	3	6	17	3
35	4	22	7	1	12	0
38	7	-5	6	3	17	9
39	3	-15	0	4	9	5
44	1	8	0			
45	7	0	20	13	14	3
46	9	8	7	8	8	3
47	3	-3	1	2	19	0
53	2	1	0			
54	2	55	0	1	12	0
56	1	11	0	3	3	3
57	3	7	0	2	3	0
58				3	10	0

LOP ERRORS IN CENTI-CYCLES AT 10.2 KHz

MAY

LOP: FH

[illegible]

LOP ERRORS IN CENTI-CYCLES AT 10.2 KHz

NOVEMBER

LOP: AB

[illegible]

LOP: AC

[illegible]

LOP: AD

[illegible]

LOP: AE

[illegible]

LOP: AF

[illegible]

LOP: AH

[illegible]

LOP: BC

MAP GRID	0600 GMT			1800 GMT		
	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION
11	9	-2	19	9	0	3
12				3	-6	0
22	3	-1	0	2	10	0
23	1	6	0	1	-16	0
24				1	-39	0
34	2	-42	12	2	-5	0
44	8	22	13	4	-3	3
45	5	26	7	5	-1	3
53	6	6	8	12	11	6
54	3	34	0	2	7	0
62	5	-1	29	3	2	3
71	2	-2	0	2	3	0
72	2	-8	0			
81				2	-4	0

LOP: BD

MAP GRID	0600 GMT			1800 GMT		
	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION
11	4	-15 *	0	9	7	1
12				3	8	0
22	3	10	0	2	23	0
23	1	14	0	1	-14	0
24				1	-40	0
34	2	-31	15	2	5	0
44	8	16	28	5	3	4
45	4	28	9	4	5	3
53	7	-13	4	11	4	6
54	3	10	0	2	10	0
62	5	-15	32	3	0	3
71	2	44	0	1	-5	0
72	2	-7	0			
91				2	10	0

LOP: BE

[illegible]

LOP: BF

MAP GRID	0600 GMT			1800 GMT		
	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION
11	9	20	12	9	6	0
12				3	9	0
22	3	18	0	2	23	0
23	1	32	0	1	-6	0
24				1	-33	0
34	2	-26	9	2	8	0
44	7	14	48	5	3	1
45	5	22	16	5	3	2
53	6	-11	7	14	7	3
54	3	36	0	2	7	0
62	4	-18	22	3	6	3
71	1	27	0			
81				2	8	0

LOP ERRORS IN CENTI-CYCLES AT 10.2 KHz

NOVEMBER

LOP: BH

[illegible]

LOP ERRORS IN CENTI-CYCLES AT 10.2 KHz

NOVEMBER

LOP: CD

MAP GRID	0600 GMT			1800 GMT		
	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION
11	4	7 *	0	9	7	2
12				3	14	0
22	3	11	0	2	13	0
23	1	7	0	1	2	0
24				1	-1	0
34	2	11	3	2	10	0
44	8	-3	11	5	6	2
45	4	3	2	4	5	5
53	7	-25	5	10	-5	4
54	3	-24	0	2	3	0
62	6	-14	2	3	-2	6
71	2	46	0	1	-6	0
72	2	1	0			
81				3	11	0

LOP: CE

[illegible]

LOP ERRORS IN CENTI-CYCLES AT 10.2 KHz

NOVEMBER

LOP: CH

[illegible]

LOP: DE

[illegible]

100

[illegible]

LJP JH

[illegible]

LOP ERRORS IN CENTI-CYCLES AT 10.2 KHz

NOVEMBER

LOP: EF

[illegible]

LOP: EH

[illegible]

LOOP ERRORS IN CENTI-CYCLES AT 100.2 MHZ

NOVEMBER

20P FH

[illegible]

APPENDIX A

FIX ERRORS AT 10.2 KHZ IN SOUTH ATLANTIC REGION

FIX ERRORS IN NAUTICAL MILES
AT 10.2 kHz FROM ONSOD MONITOR SITES

FEBRUARY

Monitor Site (map grid)	Year	Number of Points	North Error		East Error	
			Mean	Standard Deviation	Mean	Standard Deviation
Belem, Brazil (33)			<u>0600 GMT</u>			
	1975	23	0.7	6.4	0.7	6.9
	1976	24	1.7	4.1	0.1	4.0
			<u>1800 GMT</u>			
	1975	21	5.7	1.2	-1.2	0.7
	1976	25	4.7	1.5	-1.0	1.0

FIX ERRORS IN NAUTICAL MILES
AT 10.2 kHz FROM ONSOD MONITOR SITES

MAY

Monitor Site (map grid)	Year	Number of Points	North Error		East Error	
			Mean	Standard Deviation	Mean	Standard Deviation
Belem, Brazil (33)			<u>0600 GMT</u>			
	1975	21	1.7	2.5	0.1	1.2
	1976	19	0.6	2.8	0.9	1.2
			<u>1800 GMT</u>			
	1975	23	-0.1	0.5	0.4	0.4
	1976	23	0.2	0.6	0.9	0.3
Golfo Nuevo (71)			<u>0600 GMT</u>			
	1979	26	-3.9	6.9	-2.0	0.7
			<u>1800 GMT</u>			
	1979	26	-2.6	1.0	0.4	0.3
Natal, Brazil (34)			<u>0600 GMT</u>			
	1979	Not Available	0.0	4.3	-4.5	4.0
			<u>1800 GMT</u>			
	1979		-0.9	3.8	0.5	3.7

FIX ERRORS IN NAUTICAL MILES
AT 10.2 kHz FROM ONSOD MONITOR SITES

AUGUST

Monitor Site (map grid)	Year	Number of Points	North Error		East Error	
			Mean	Standard Deviation	Mean	Standard Deviation
Belem, Brazil (33)			<u>0600 GMT</u>			
	1975	10	3.2	2.1	-2.7	1.3
	1976	24	1.2	2.5	0.5	2.4
			<u>1800 GMT</u>			
	1975	10	0.9	0.8	0.3	0.7
	1976	28	0.7	0.7	0.4	0.4
Golfo Nuevo (71)			<u>0600 GMT</u>			
	1977	19	34.1	2.3	21.8	0.9
	1979	18	27.1	8.6	18.6	7.0
			<u>1800 GMT</u>			
	1977	21	0.8	0.7	0.8	0.4
	1979	14	-2.0	1.4	-0.1	0.7

FIX ERRORS IN NAUTICAL MILES
AT 10.2 kHz FROM ONSOD MONITOR SITES

NOVEMBER

Monitor Site (map grid)	Year	Number of Points	North Error		East Error	
			Mean	Standard Deviation	Mean	Standard Deviation
Belem, Brazil (33)	1975	12	<u>0600 GMT</u>			
			0.4	2.8	-1.0	0.9
	1975	14	<u>1800 GMT</u>			
			3.5	2.6	-1.4	1.1
Natal, Brazil (34)	1978		<u>0600 GMT</u>			
			0.2	0.7	4.3	4.0
	1978		<u>1800 GMT</u>			
			-0.1	0.3	0.0	0.3

FIX ERRORS IN NAUTICAL MILES AT 10.2 KHZ FROM IOS MEASUREMENTS

FEBRUARY, 0600 GMT

[illegible]

THE RECORDS OF THE NATIONAL ARCHIVES

538, 42, 101, 34

[illegible]

FIX ERRORS IN NAUTICAL MILES AT 10.2 KHz FROM IOS MEASUREMENTS

MAY, 0600 GMT

MAP SPID	NORTH ERROR			EAST ERROR		
	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION
11	6	-2.0	0.2	6	-1.0	2.2
12	3	1.0	4.2	3	-1.1	3.0
22	3	-2.3	0.7	3	0.8	2.6
23	8	-1.6	0.5	8	-1.8	0.7
34	8	-0.6	1.2	8	0.2	1.5
35	5	-0.1	1.6	5	-2.3	0.5
38	6	-1.9	1.1	6	0.1	1.5
39	2	-1.4	1.6	2	0.7	0.6
44	1	-1.1	0	1	-2.2	0
45	4	0	0.6	4	-2.1	0.4
46	11	-0.3	1.1	11	-1.3	0.8
47	3	0.7	0.2	3	1.0	1.6
54	3	-1.8	3.1	3	-0.5	4.7
56	1	-1.8	0	1	-2.0	0
57	7	-1.5	1.0	7	-1.2	1.6
58	1	-2.4	0	1	-0.8	0
69	4	-2.5	1.0	4	0.6	1.0

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SOUTH ATLANTIC OMEGA VALIDATION VOLUME 2 APPENDICES F-L 4/4

(U) SYSTEMS CONTROL TECHNOLOGY INC PALO ALTO CA

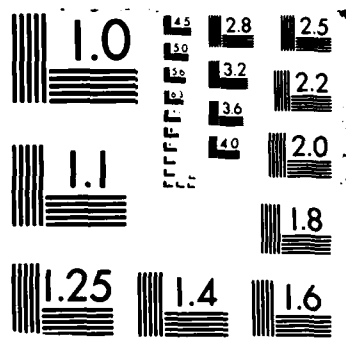
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FIX ERRORS IN NAUTICAL MILES AT 10.2 KHz FROM IOS MEASUREMENTS

MAY, 1800 GMT

MAP GRID	NORTH ERROR			EAST ERROR		
	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION	NUMBER OF POINTS	MEAN ERROR	STANDARD DEVIATION
11	5	-0.3	0.2	5	-0.2	0.5
12	4	-0.5	0.3	4	-0.3	0.9
22	1	-0.2	0	1	-0.2	0
23	6	-0.2	1.0	6	-0.3	1.2
34	10	-0	0.3	10	1.1	0.5
35	1	0.4	0	1	-1.2	0
37	3	-1.5	2.2	3	-0.8	1.8
38	3	-0.8	1.1	3	-0.7	0.2
39	4	-1.5	0.2	4	-0.2	0.1
45	12	0.6	0.3	12	-1.4	0.3
46	8	-0.2	0.5	8	-1.0	0.3
47	3	0.0	0.8	3	-1.8	1.1
54	1	0.9	0	1	-1.5	0
56	4	-0.1	0.6	4	-1.0	0.7
57	6	0.7	0.5	6	-1.4	1.1
58	2	-1.1	0	2	-2.0	0.4
68	3	-1.4	0.4	3	-0.2	0.5
69	4	-1.2	0.4	4	-0.7	0.8

FIX ERRORS IN NAUTICAL MILES AT 10.2 KHz FROM IOS MEASUREMENTS

November, 0600 GMT

[illegible]

NOVEMBER, 1800 GMT

[illegible]

APPENDIX L

RESULTS OF NOSC AIRBORNE MEASUREMENTS
ALONG TRANSMITTER RADIALS AT 10.2 KHZ

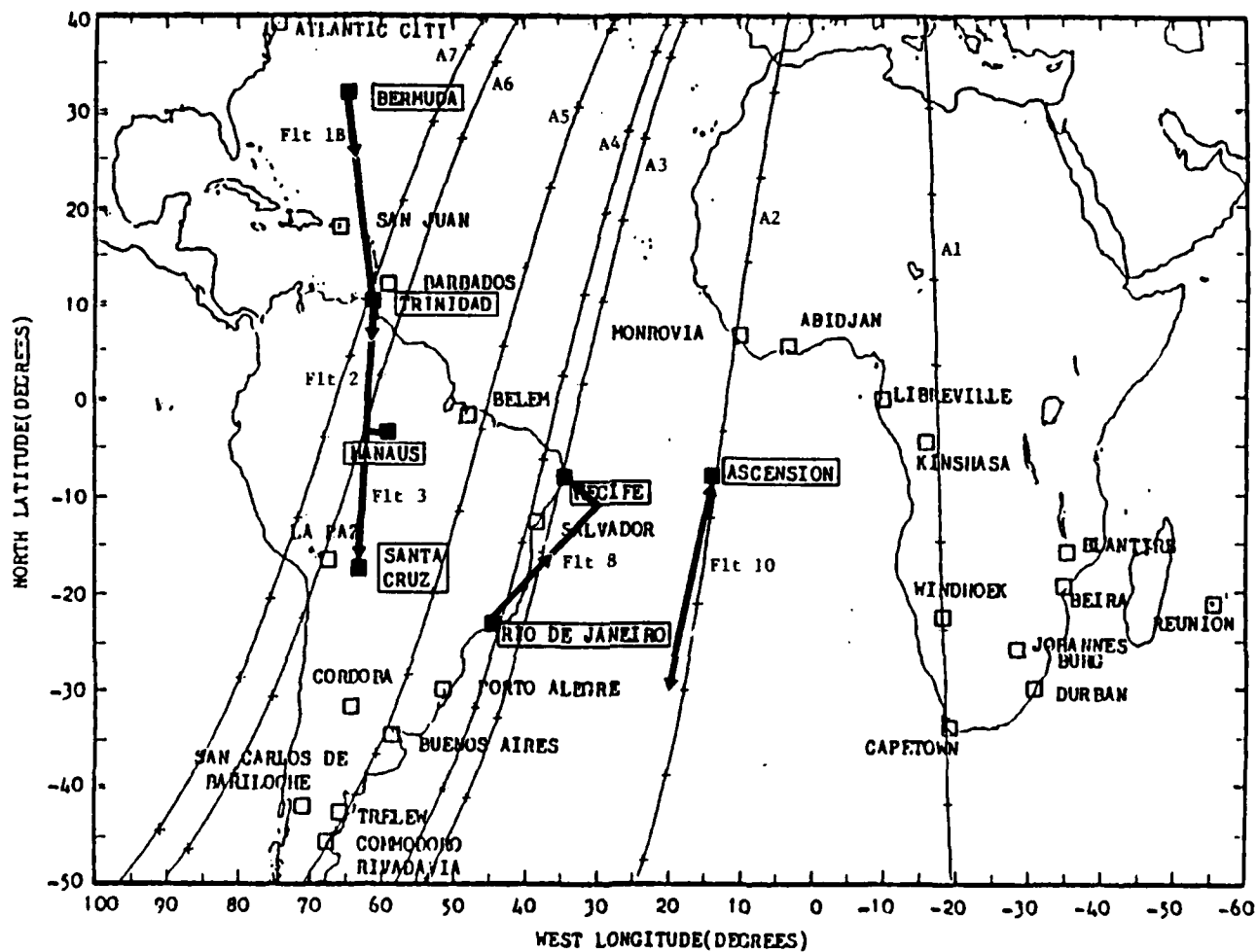


Figure L-1. Azimuths for predicted radials from Omega Norway and ground tracks for NOISC test flights.

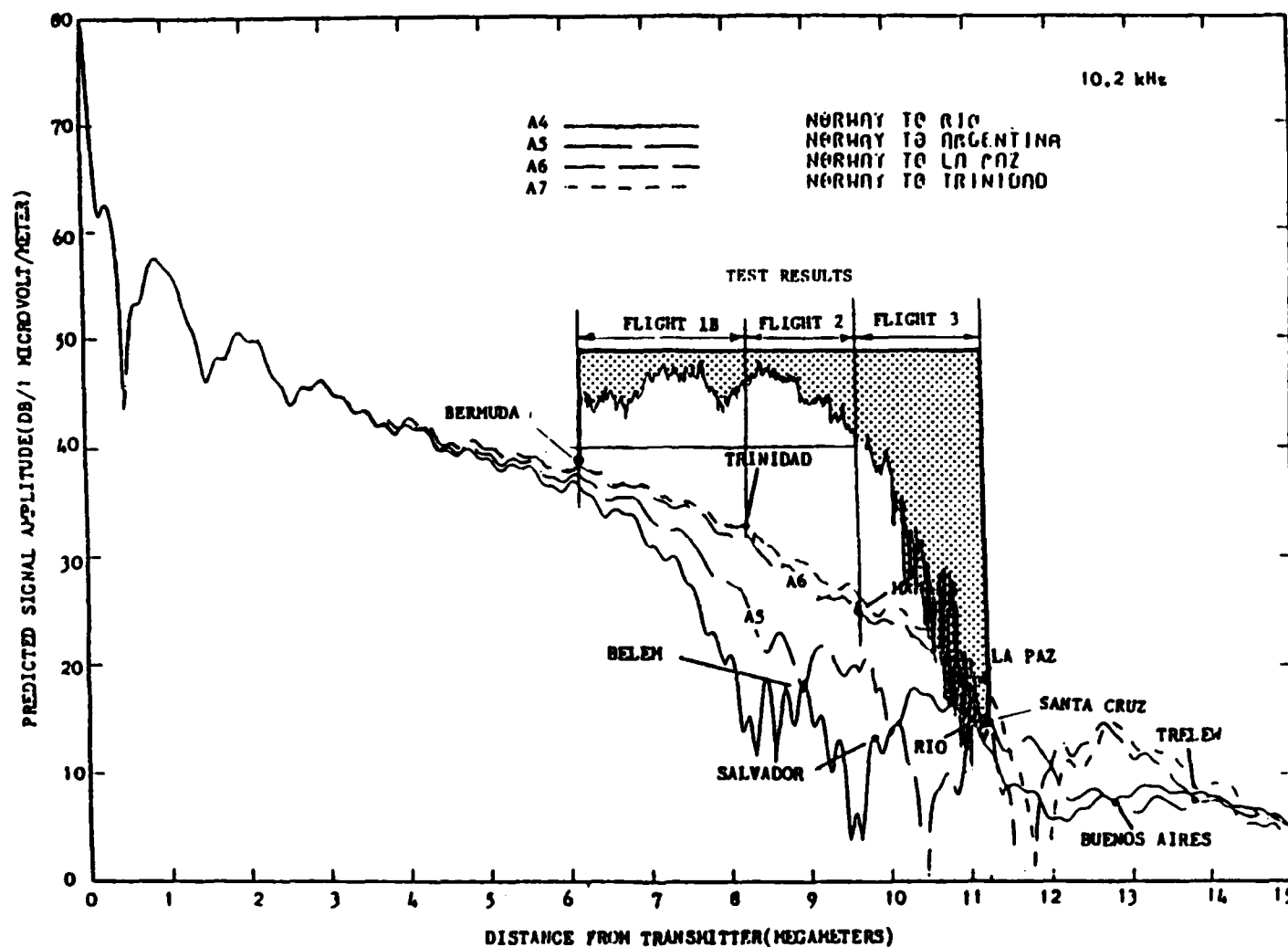


Figure L-2. Predicted nighttime signal amplitudes at 10.2 kHz as functions of distance from an assumed 1-KW transmitter at Norway along selected radials, and observed signal amplitudes as functions of distance from Norway during Flights 1B, 2 and 3 (References 21 and 22).

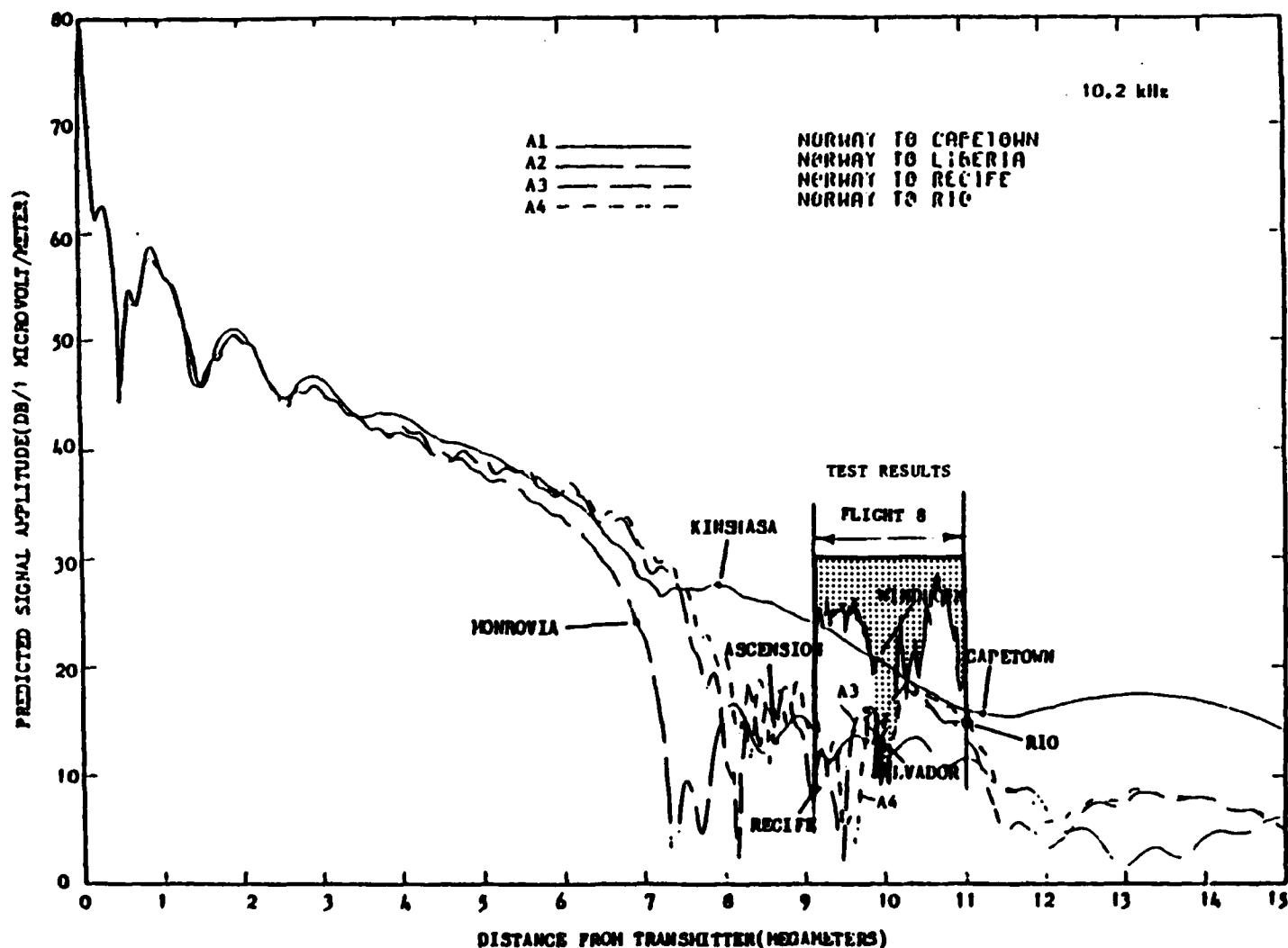


Figure L-3. Predicted nighttime signal amplitudes at 10.2 kHz as functions of distance from an assumed 1-KW transmitter at Norway along selected radials, and observed signal amplitudes as functions of distance from Norway during Flight 8 (References 21 and 22).

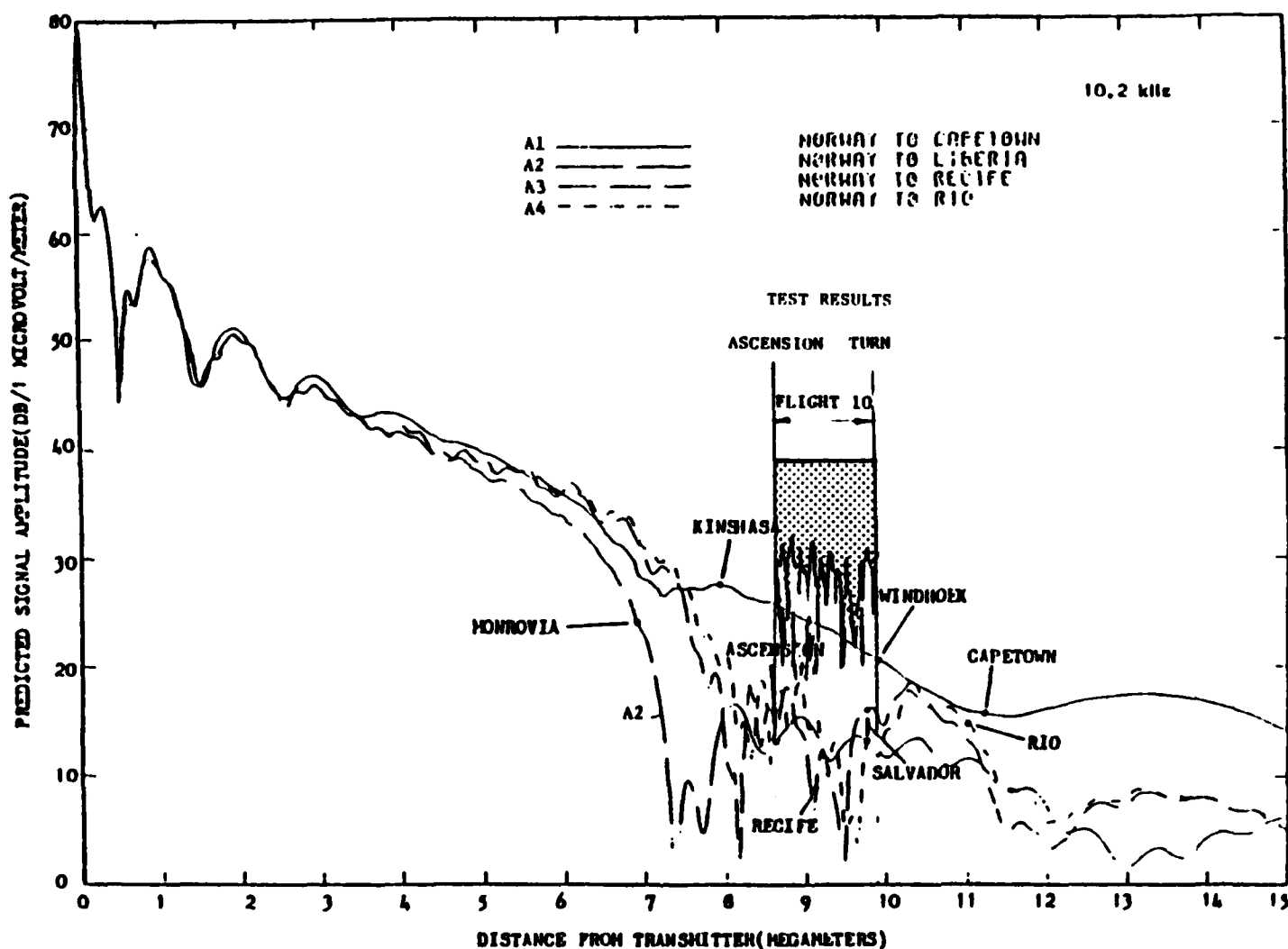


Figure L-4. Predicted nighttime signal amplitudes at 10.2 kHz as functions of distance from an assumed 1-KW transmitter at Norway along selected radials, and observed signal amplitudes as functions of distance from Norway during Flight 10 (References 21 and 22).

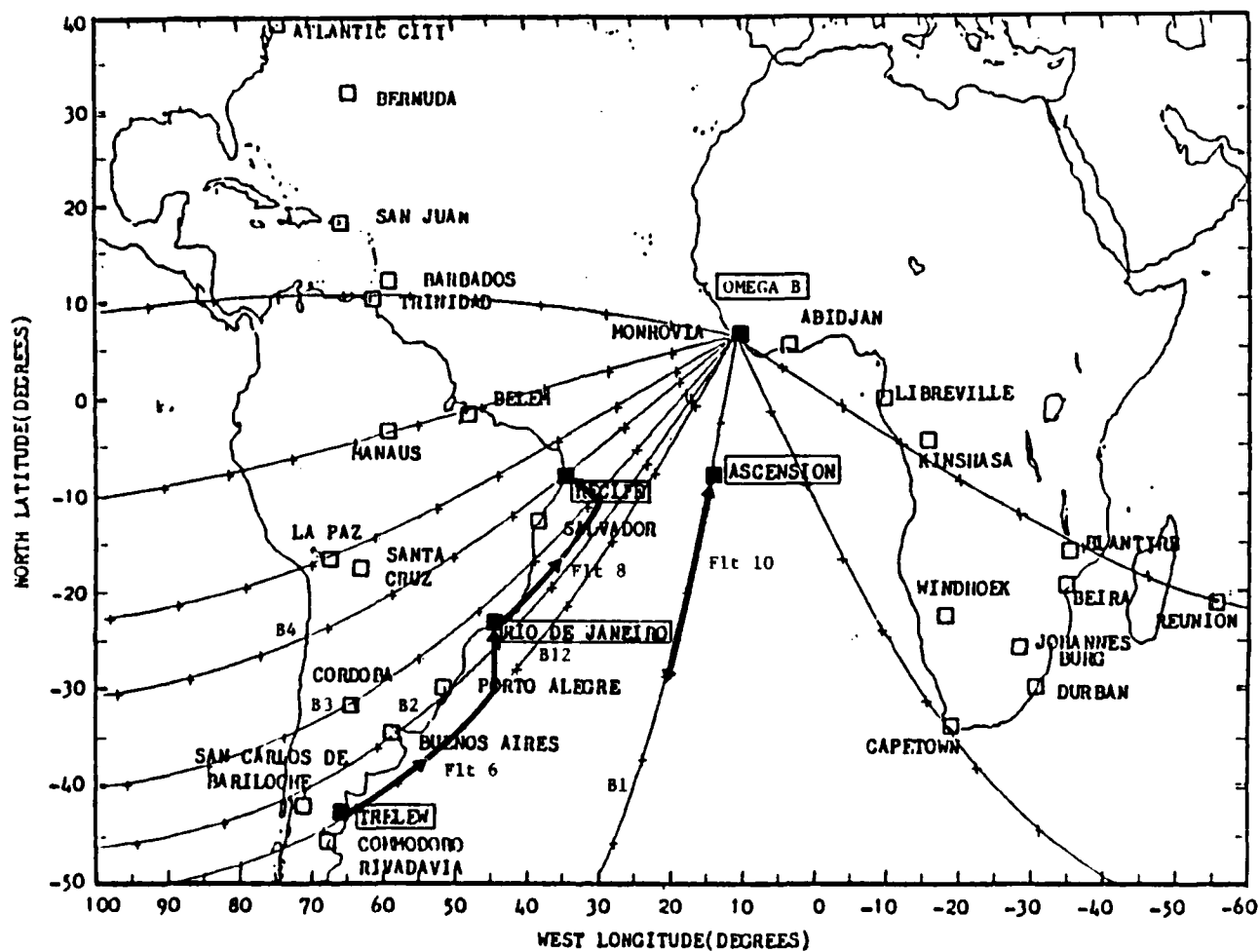


Figure L-5. Azimuths for predicted radials from Omega Liberia and ground tracks for NOSC test flights.

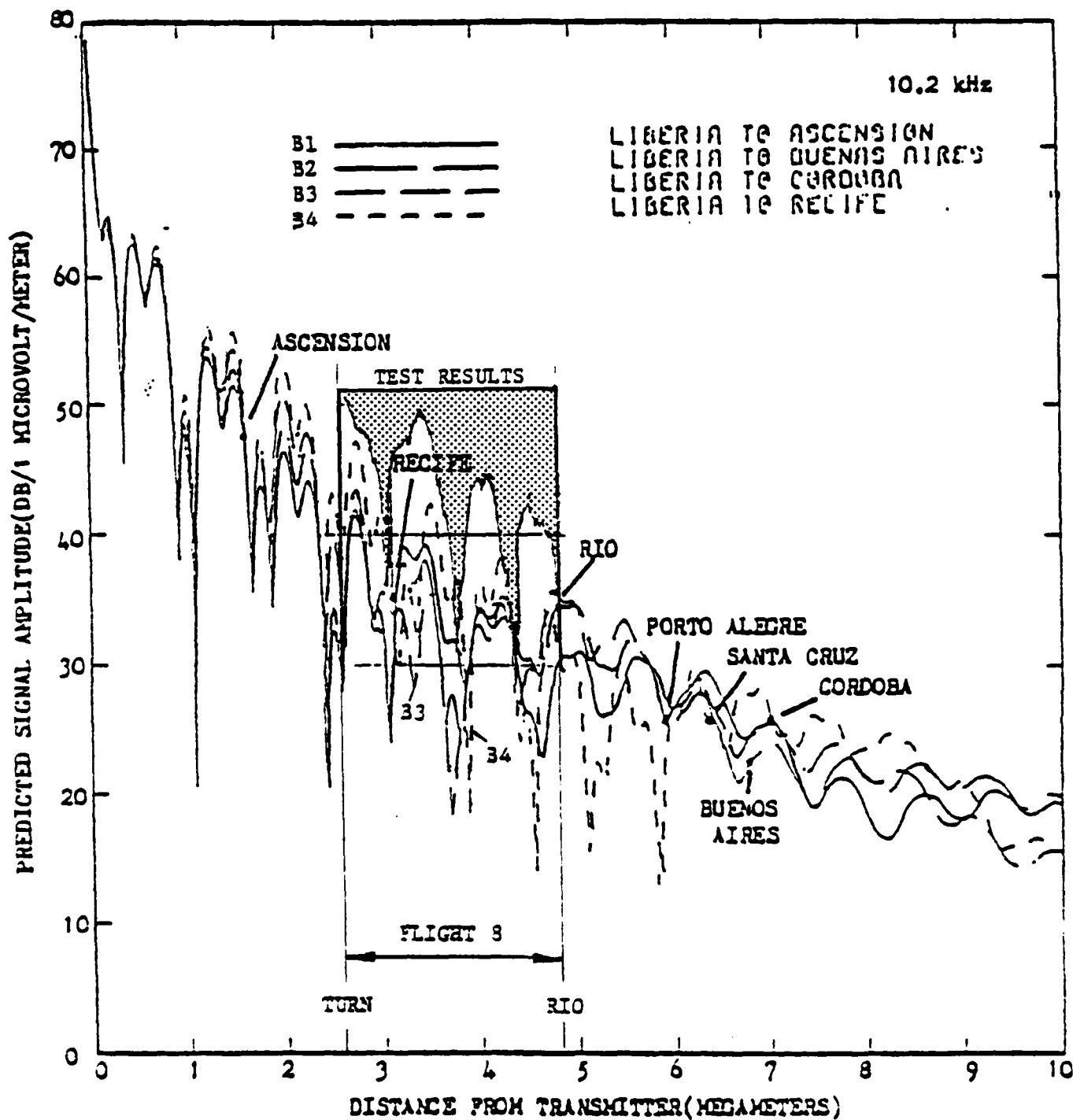


Figure L-6. Predicted nighttime signal amplitudes at 10.2 kHz as functions of distance from an assumed 1-KW transmitter at Liberia along selected radials, and observed signal amplitudes as functions of distance from Liberia during Flight 8 (References 21 and 22).

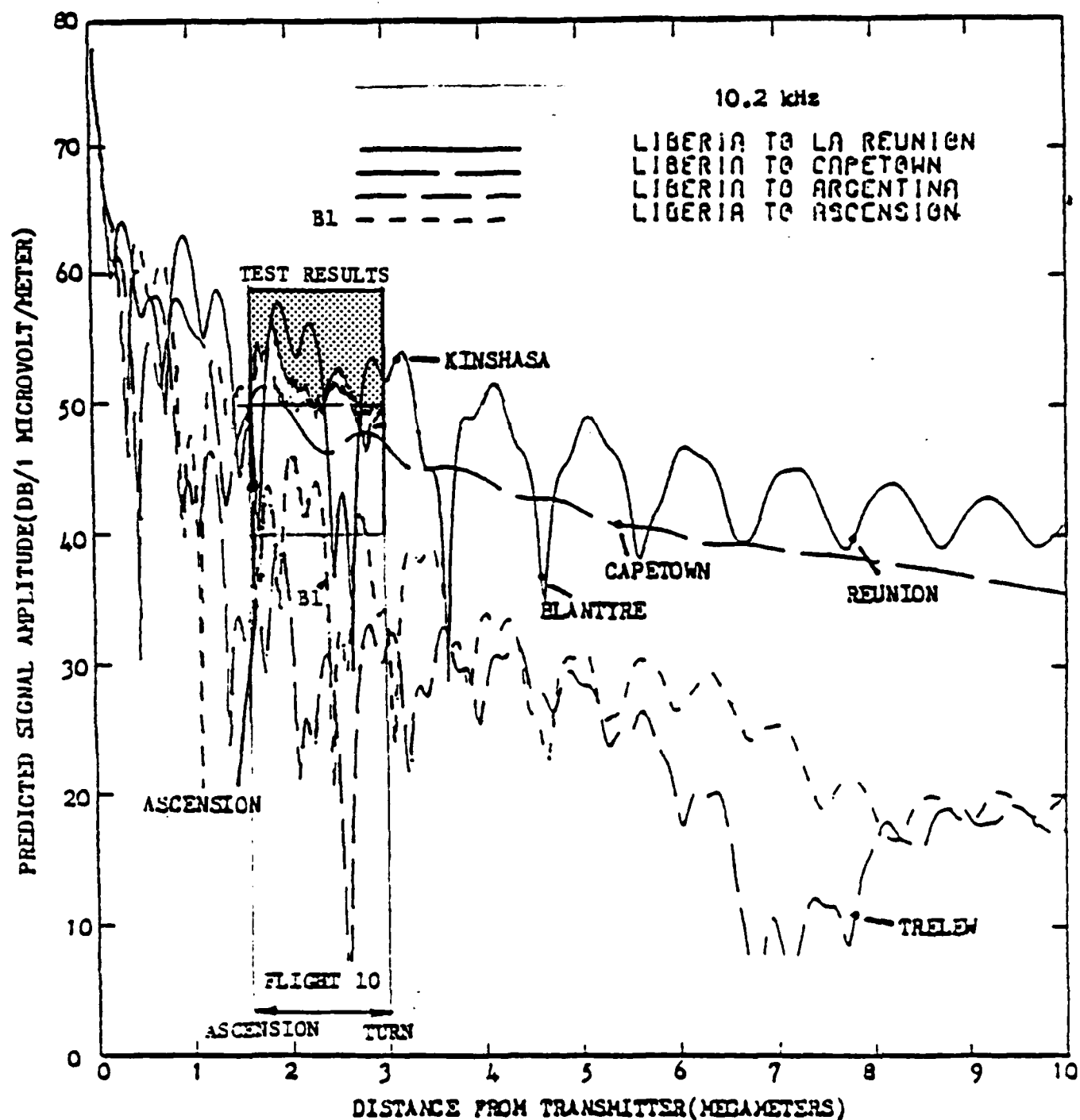


Figure L-7. Predicted nighttime signal amplitudes at 10.2 kHz as functions of distance from an assumed 1-KW transmitter at Liberia along selected radials, and observed signal amplitudes as functions of distance from Liberia during Flight 10 (References 21 and 22).

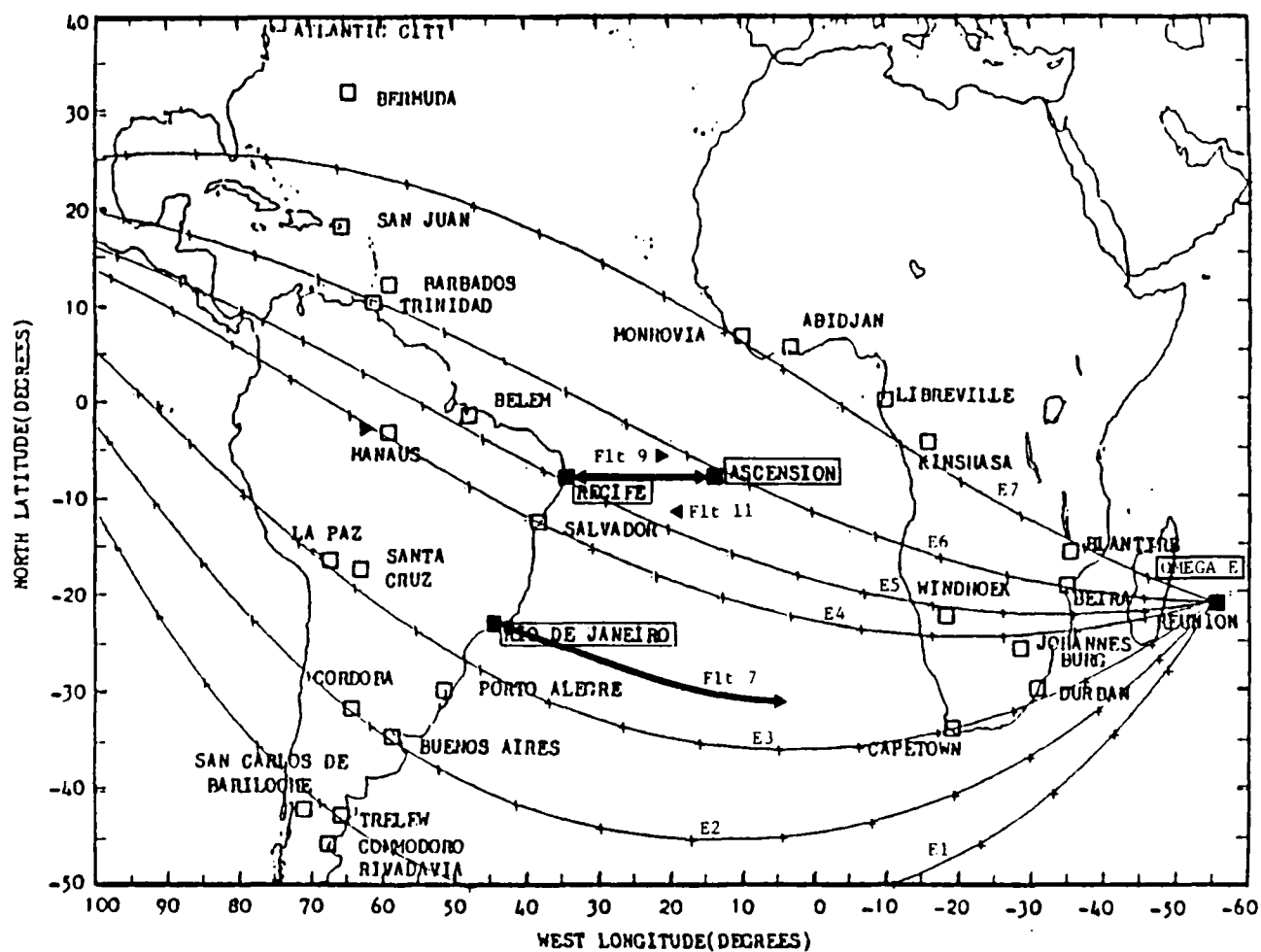


Figure L-8. Azimuths for predicted radials from Omega La Reunion and ground tracks for NOSC test flights.

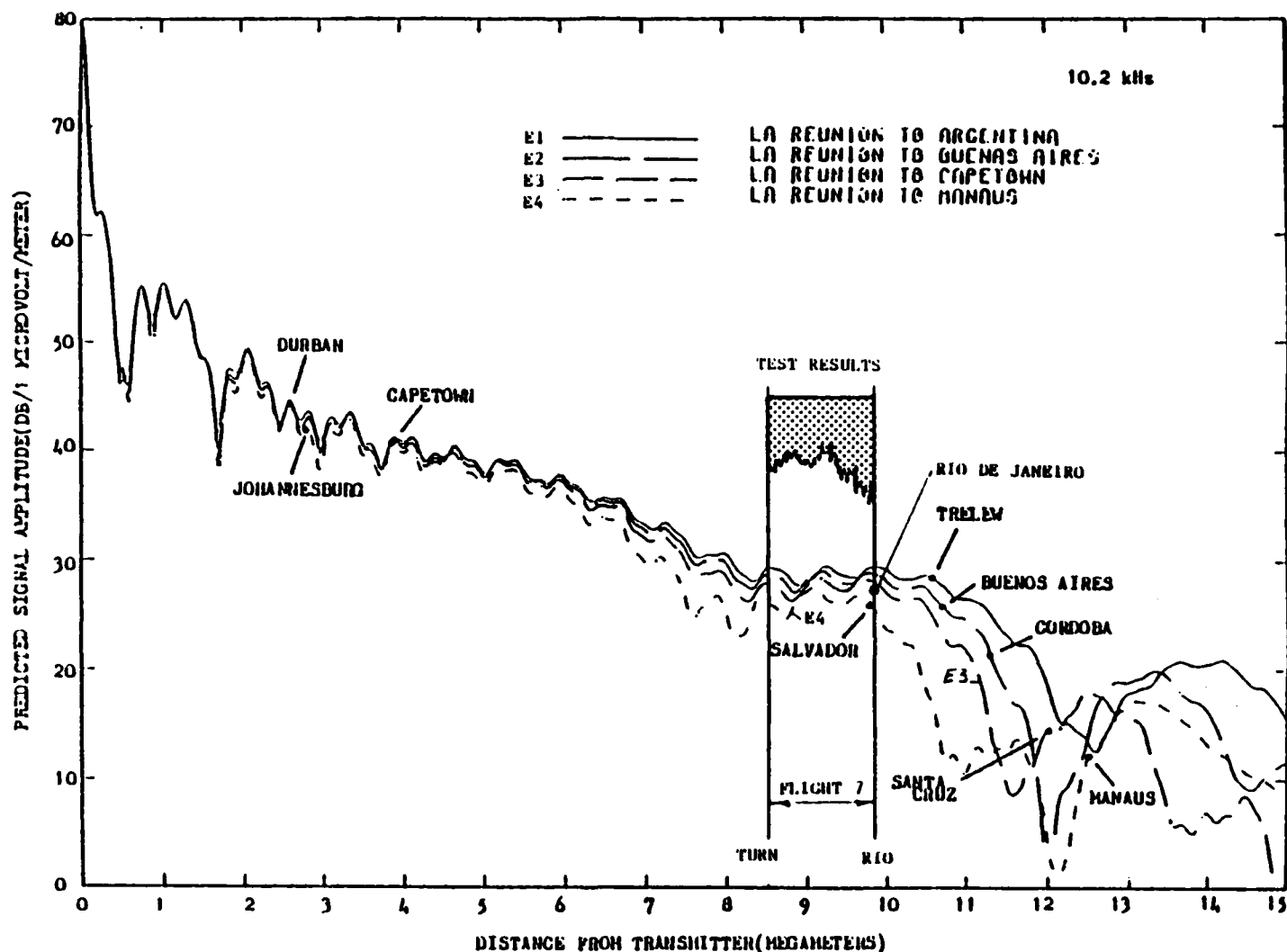


Figure L-9. Predicted nighttime signal amplitudes at 10.2 kHz as functions of distance from an assumed 1-KW transmitter at La Reunion along selected radials, and observed signal amplitudes as functions of distance from La Reunion during Flight 7 (References 21 and 22).

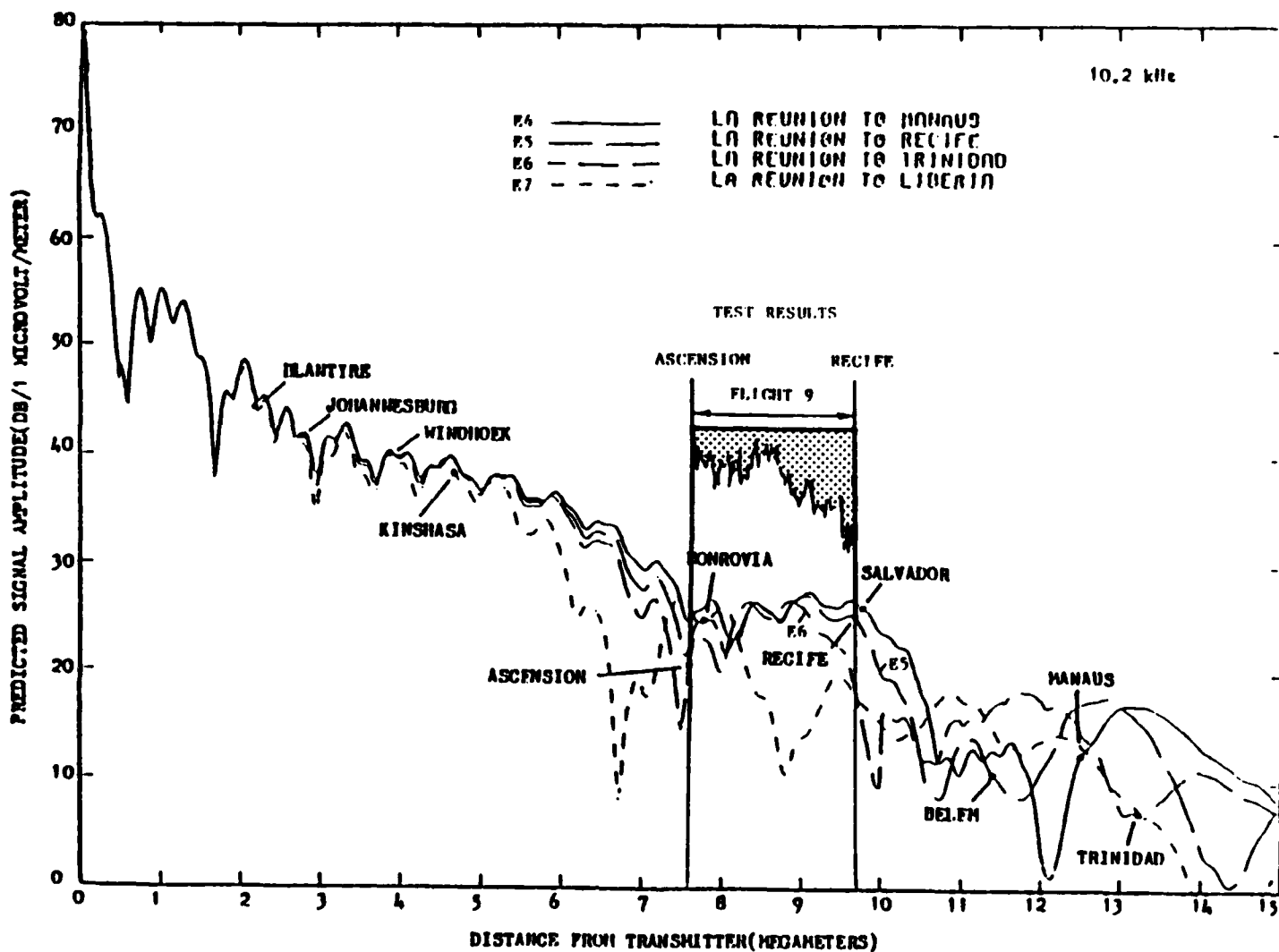


Figure L-10. Predicted nighttime signal amplitudes at 10.2 kHz as functions of distance from an assumed 1-KW transmitter at La Reunion along selected radials, and observed signal amplitudes as functions of distance from La Reunion during Flight 9 (References 21 and 22).

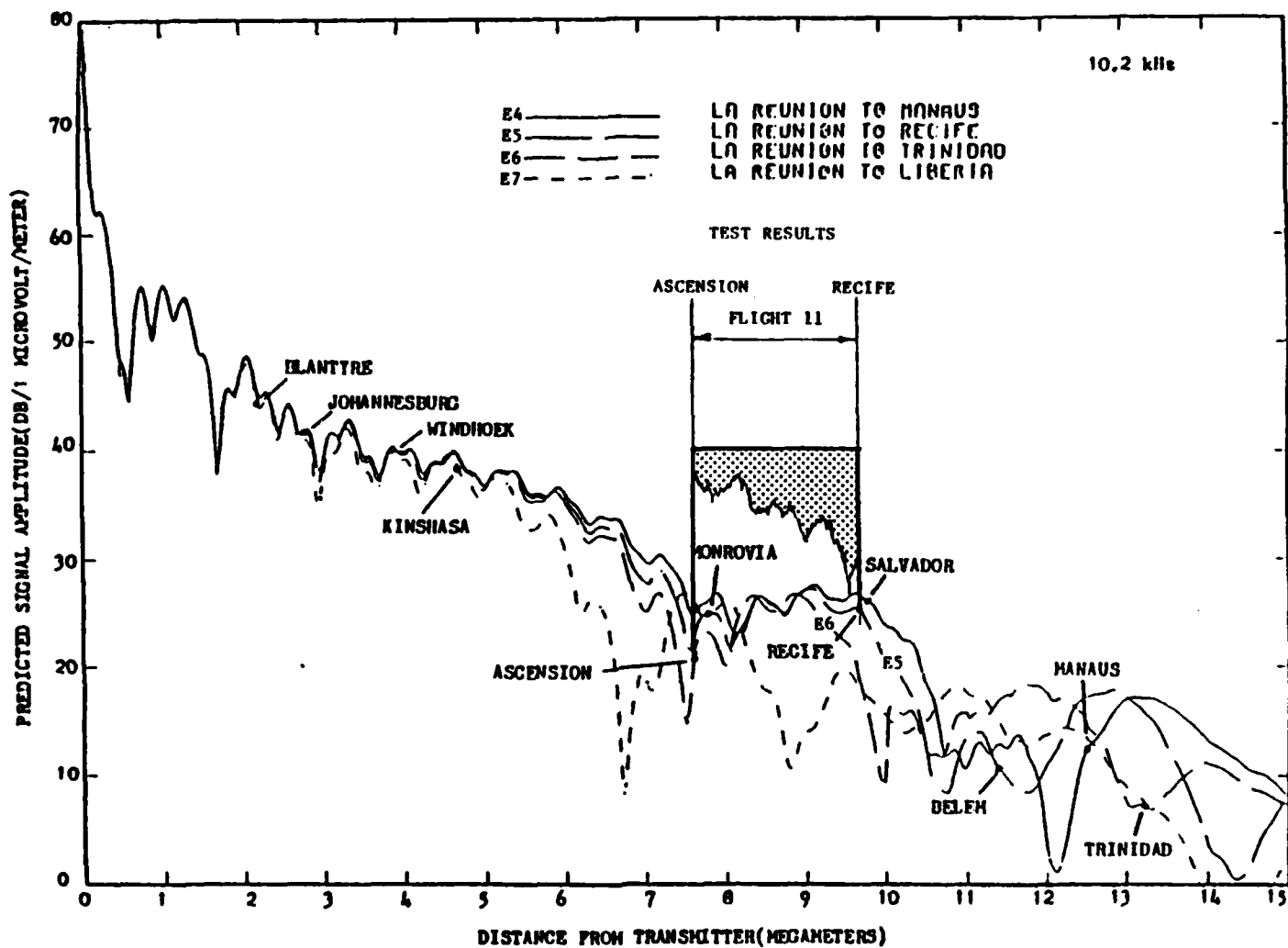


Figure L-11. Predicted nighttime signal amplitudes at 10.2 kHz as functions of distance from an assumed 1-KW transmitter at La Reunion along selected radials, and observed signal amplitudes as functions of distance from La Reunion during Flight 11 (References 21 and 22).

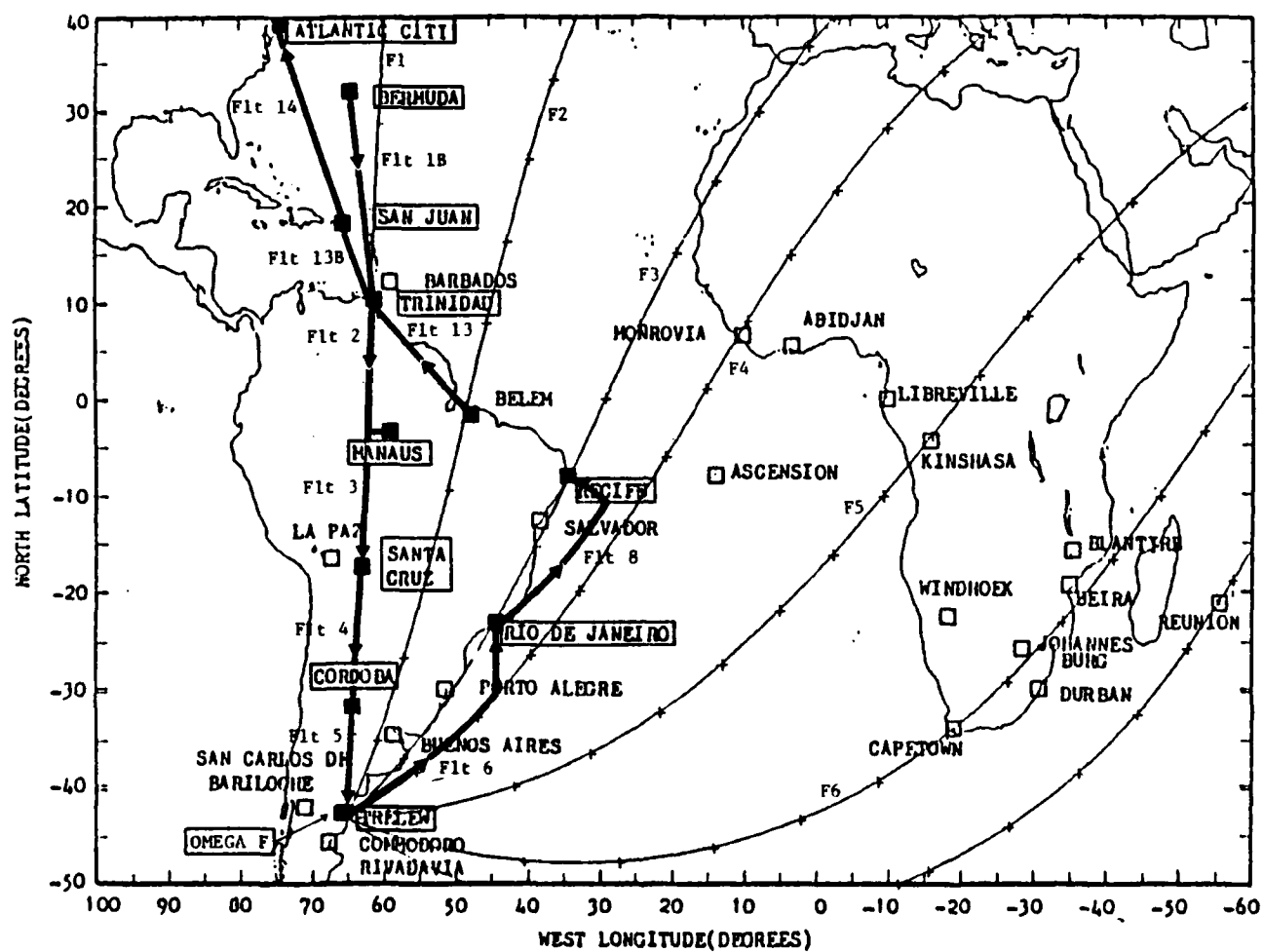


Figure L-12. Azimuths for predicted radials from Omega Argentina and ground tracks for NOISC test flights.

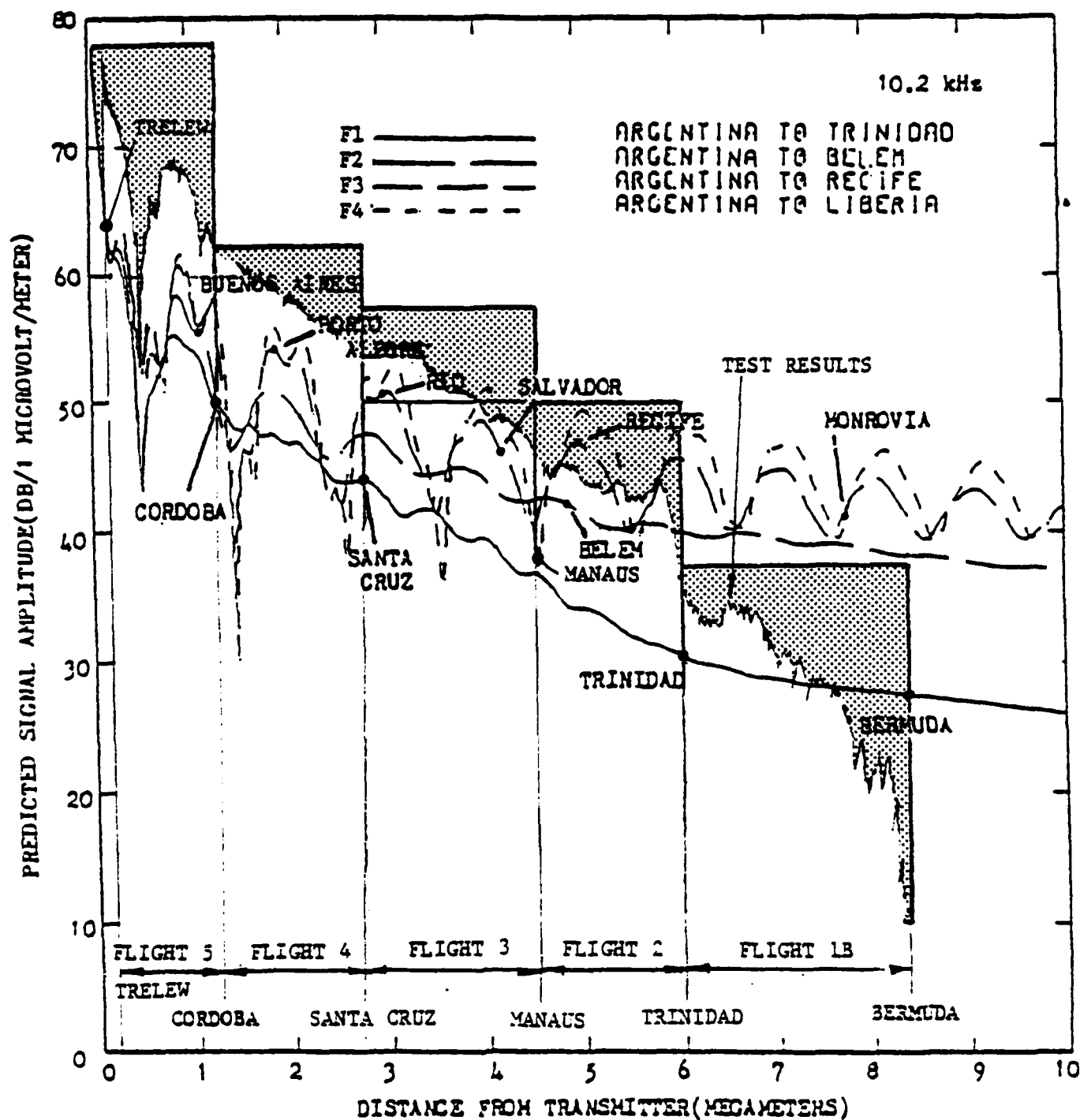


Figure L-13. Predicted nighttime signal amplitudes at 10.2 kHz as functions of distance from an assumed 1-KW transmitter at Argentina along selected radials, and observed signal amplitudes as functions of distance from Argentina during Flights 1B, 2, 3, 4, and 5 (References 21 and 22).

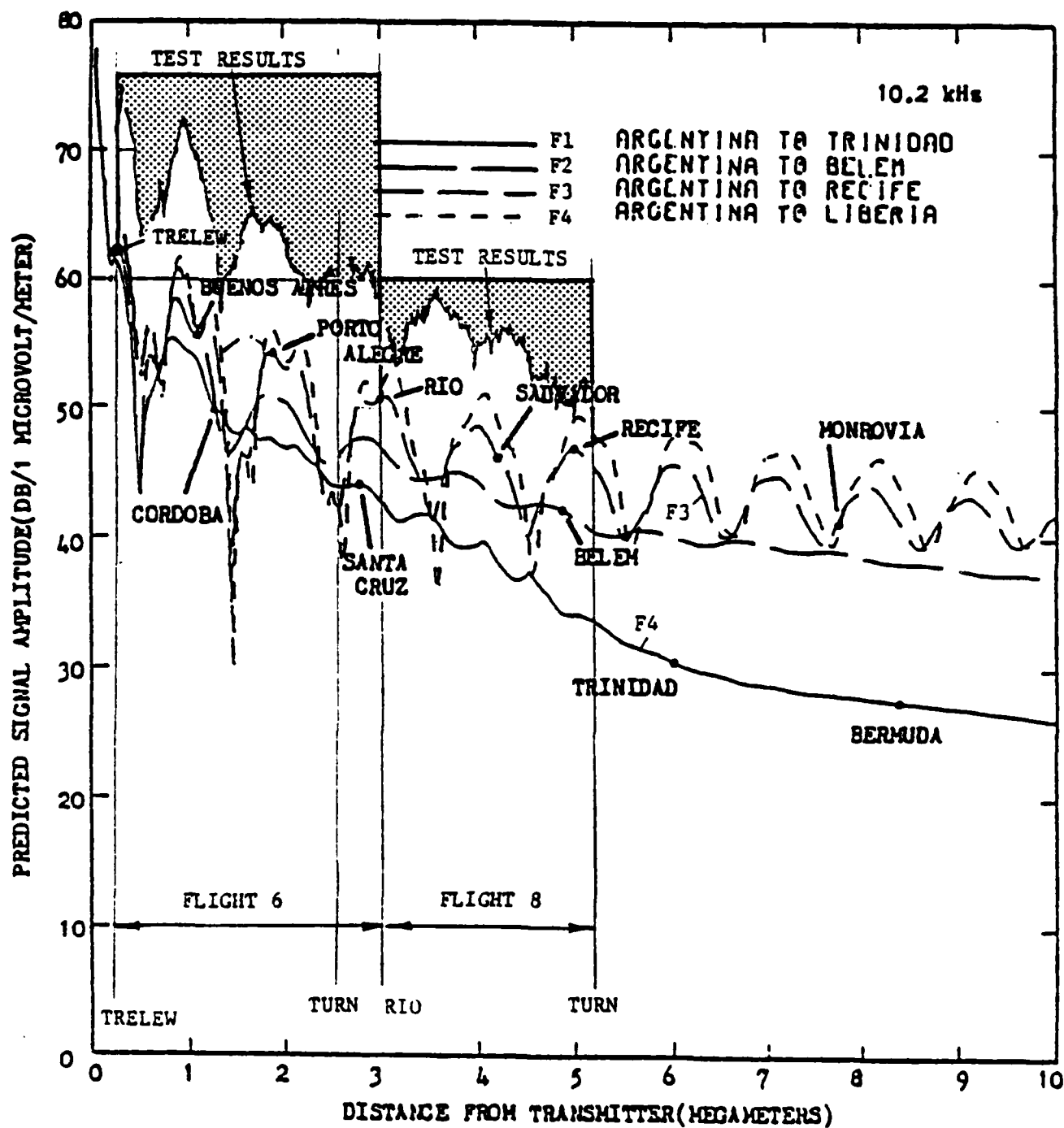


Figure L-14. Predicted nighttime signal amplitudes at 10.2 kHz as functions of distance from an assumed 1-KW transmitter at Argentina along selected radials, and observed signal amplitudes as functions of distance from Argentina during Flights 6 and 8 (References 21 and 22).

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